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The PHOTOFACT Servicer

JANUARY 12, 1948 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ VOL. 4, No. 32

ROBERT M. ELLIS, *Editor*

BUSINESS IS GOOD

"Those interviewed at the Electronic Conference in Chicago were unanimous in the joyful expression that 'business is good.'

"Two demonstrations at Chicago gave promise that the bandied-about 'electronic age' was nudging through the crowd of postwar miracles. One is the long-in-coming 'citizens' radio.' In February, 1945, considerable enthusiasm was expressed over the newly granted frequency of 460-470 megacycles set aside for a public radio park. One in which anyone could wander about the ether lanes, transmitting and receiving without the encumbrance of a Federal test. But there it lay for years. Recently, *Electronics* magazine took the bull by the horns and appropriated the cash to have designed and built a class-A citizens' band transmitter receiver. FCC says a class-A citizens' radio transmitter-receiver is one so stable on the band that it can use either the 460 or the 470 edge of the granted lane. But there is that yawning area between these critical edges which can be used by class-B transmitter-receivers which are tunable, as long as they stay away from either edge. In this class is the opportunity for design which permits of reasonably inexpensive construction.

"There is one such piece of gear (maybe more) which is ready to go on the production line as soon as the FCC engineers approve it and it is reasonable to believe that this will be in a matter of weeks. Here's what it's like. There's a leather carrying case about the size of a 3¼ x 4¼ camera and accessory case, complete with shoulder strap. Wanta talk to somebody in the band?

"Pull out a transmitter-receiver, camera-size, from a section of the case (the A and B batteries stay put in the other section). Open up a T aerial and plug it into the top, put a strap type earphone on your good ear, turn on the set and start talking into the microphone on the lower face of the box. Waggle the tuner knob until you pick up an answer. Of course you can fix the setting in tune with another set.

"The darn thing works—but it is tricky as all getout—not because of poor design. The phenomenon of this particular piece of the spectrum creates strange situations. Two farmers on hilltops ten miles apart can talk away fine. Owners of huge farms can talk from reaper to barn to kitchen if there isn't some reason why they can't. Geophysical prospectors can keep in touch with headquarters or other units maybe ten miles away—but maybe not at all.

"This sounds screwy, but here's the reason why. Your four sixty-four seventy mc waves do not like obstacles. In a city street two citizens'-wave set owners might not hear each other a block away or around the corner, but either might take a few steps away and get into a spot where the waves would bounce from hither to hence and plunk into the other guy's aerial. A farmer might not be able to contact his wife because of an intervening woods. On the other hand he might get close to his side of the woods and swish right through, the area under the trees acting as a sort of wave guide. It is that unpredictable, and the people who are making these things want you to know it. No do-all, this citizens' band. The cost? They say less than $200 a pair of transmitter-receivers. It's going to be a great business, even with the limitations.

"Then, there is another one about which we speak with reverence. It is an electronic seeing eye for the blind. Already the art of electronics has contributed hearing to tens of thousands of partially deaf and other thousands with certain types of 'stone' deafness. Now we have seen what it can do, is doing, for the yet more unfortunate blind. An inconspicuous piece of gear is strapped about the neck. It is connected to a hearing-aid type ear phone. The box beams an ultrasonic ray which echoes (radar-like) from objects in its path. A pulse is generated which, when transferred to a sonic wave, tells the wearer where he is at. A distant object creates a slow beat which speeds up proportionally as the wearer approaches the object.

"So the blind learn to use this God-sent device as they learn Braille. The registry of distance by the speedup of the beat eventually becomes so instinctive that he can get around with uncanny ease, far more truly than with a seeing-eye dog. In fact it has been proved in a rather ultimate test. An experienced user, totally blind, can approach a revolving door, pause, then step into a section about as easily as you can.

"If the new era of electronics does no more than relieve or remove the handicaps of the physically afflicted, it justified itself as one of the greatest developments of all time."

We reprint this from the November issue of **Electronic Markets*, hoping it will give you the same inspiration it gave us. Who will service all these new electronic gadgets? The neighborhood independent radio service technician, of course!

**Electronic Markets* is a small monthly booklet published by *Electronics Magazine* (McGraw-Hill) for management, sales and advertising men, whose interests lie in the future of the electronic industry.

★ ★

COMMENT ON FILING

When we started our business, we knew we had many problems that time alone could solve. Because the service we proposed was entirely unique in radio history there were no precedents—no antecedents. We, however, knew we could not help but succeed if we were to govern our business by the principle "It is right only if it really helps the service technician—makes his work easier—more profitable."

One of our unsolved problems was the matter of filing, and into that problem we place a great deal of thought and research; and from this we printed the Folder "5 Good Ways to File PHOTOFACT Folders." If you are in any way dissatisfied with your present method of filing, write for a copy—it's free. There is a method of filing that will meet the special individual requirements of your shop.

Since first conceived, we have passed on the "30-second" filing system to hundreds of patrons; and to the best of our knowledge, not a single subscriber who ever tried this system has reverted to any other method of filing. Our own feeling is that when the "30-second" filing system is combined with the new back-loading binder, the combination is ideal. Incidentally, if you have not already done so now is the time to get your binder for Volume 4. The price is $3.39 net, and you can get one from your distributor or directly from us. Adequate supplies are available for immediate delivery.

If you wish to apply the "30-second" filing system to the older Folders in Volume 2 (Sets 11 through 20) or Volume 1 (Sets 1 through 10) you can do so. Sets of 11 tabbed index separator cards for Volume 1, also sets for Volume 2 are available at our cost of 40¢ per set. Order from your distributor or directly from us and specify the Volume Number desired.

★ ★

WHITE BACKGROUNDS

We are always trying to find ways of making PHOTOFACT Folders better. For instance, have you noticed the new "white backgrounds" in the pictures, starting with Set 29?

We think this makes the pictures clearer and more distinct. Do you agree?

★ ★

FREE SCHEMATIC SUPPLEMENT SHEET

An insert sheet containing the schematic of the latest factory revision of the Webster 79, 80 Wire Recorder is available without charge to all purchasers of the Howard W. Sams 1947 Automatic Record Changer Manual, First Edition. The reverse side of the sheet provides a correction on the circuit of the earlier production. This correction will be included in the Second Edition, as a part of the Manual. Your copy of this "Insert Sheet" will be mailed promptly on receipt of your request.

Here again is evidence of a policy that makes "PHOTOFACT" publications the "best value" in practical service literature.

FIELD EXPERIENCES

Here is your opportunity for passing practical service experiences to others for the benefit of all. For every service "Field Experience" published, we issue to the author a certificate that is good for one PHOTOFACT Folder Set. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Company, Inc.

★ ★

RECTIFIER CIRCUIT CHECKER

"Here is a system we use to prevent the burning out of rectifier tubes when checking sets. It is recommended for all rectifiers that do not give a warning of an overload by red hot plates.

"Take a tube base of the appropriate number of pins and a socket to match. Wire them together straight through, on a box, panel, bakelite tube or whatever your ability suggests, and leave enough flexible wire on the plug end for it to go into the rectifier socket of any radio.

"Cut the plate leads and install a dial light socket in each one. Insert a 47 or 40 dial light in each socket. Now put a new tube in the gadget socket and the plug in the rectifier socket of the radio. Turn on the power and if the dial lights don't blow it is o.k. to install the rectifier tube direct.

"We have wired up 6 sockets to take care of most rectifiers in a permanent box and it has done a considerable part during the war and since to conserve materials."

Submitted by: Mr. Jack Mayr, Radio Doctor, Chico, Calif.

★ ★

PHILCO 922

"On the Philco 922, I found a vibrator hum that was very difficult to locate.

"On one side of the heater of each tube is grounded to the chassis by means of a soldering lug under the socket rivet. I found the connections good enough to carry the filament current. However, if the same lug is used for the grid return, hum in the filament circuit will appear on the grid.

"Remedy: Solder a piece of braid from each ground lug to the chassis. This procedure would apply to any set using this same construction."

Submitted by: Mr. Walter J. Swontek, 5917 Storer Avenue, Cleveland 2, Ohio.

★ ★

GENERAL ELECTRIC 250

Photofact 464-13, Set 4

"Complaint: Will not play on battery, but plays on a.c. Battery will not charge. Acts as if the copper oxide rectifiers were faulty.

"The contacts on the power selector switch, PHOTOFACT Item 57 that connects battery to charging circuit were not making contact. Realigning these cleared up the trouble."

Submitted by: Vernon D. Parnell, Spare Hour Radio Clinic, 122 Victory Courts, Conway, Arkansas.

★ ★

ZENITH 9H079

Photofact 467-34, Set 7

"Complaint: Standard broadcast band dead when first starting set, pushing of phono-radio switch starts set and plays o.k. until turned off.

"Remedy: Although not shown on schematic, a 47,000 ohm resistor across A and D on oscillator coil No. 105 on diagram cured the trouble. Later sets had this resistor on the coil."

Submitted by: Mr. Irving Kay, Service Department, Mortimer H. Fogel, 92 Liberty Street, New York 6, New York.

★ ★

SILVERTONE WIRE RECORDER 7085 AND 7102

Photofact 4720-27, Set 30

"Complaint: No volume on strong local stations—just audible.

"Remedy: Check both 35Y4 tubes. If o.k. remove chassis, check 25 ohm resistor connected between prongs Nos. 3 and 7 on the second 35Y4 socket from the end of the chassis. This resistor is R25." (Editor's note: PHOTOFACT Item 55.)

Submitted by: Mr. Clare E. Ernst, 4918 Laurene Street, Flint 5, Michigan.

MOTOROLA AUTO RADIO 505

Photofact 464-37, Set 4

"Complaint: Intermittent hum, sounding like vibrator trouble, or filters breaking down; however, the power supply voltages do not change during the periods of humming.

"The trouble was caused by leakage through oxides collected around the fiber insulating wafer at the base of the electrolytic condenser. Cleaning this cleared this tricky trouble."

Submitted by: Mr. Sterling K. Berberian, 344 Albert Street, East Lansing, Michigan.

★ ★

PHILCO 46-1209

Photofact 473-24, Set 13

"Complaint: Radio plays normally, but inaudible on phonograph operation.

"Check the 470,000 ohm resistor leading from the plate (Pin 6) of the 7AF7 tube to the positive side of the 25 mfd. condenser. This resistor was found open on two sets."

Submitted by: Mr. Maurice D. Woodruff, Modern Appliance Shop, Radio Service, Celina, Ohio.

★ ★

BUICK 980534—980535

"Complaint: Intermittent loss of sensitivity on distant stations.

"The trouble was found to be an open in the ½ meg. filter resistor in the a.v.c. circuit."

★

REGAL 747

Photofact 4717-22, Set 27

"Complaint: 'A' batteries run down when the set is turned off.

"Because the insulation was broken or rubbed through on the wire running from the power change switch to the on-off switch, the wire was grounding to the chassis. This closed the 'A' circuit even when the switch was turned off."

Submitted by: Mr. R. V. Hamme, 359 East Philadelphia Street, York, Pennsylvania.

★ ★

BENDIX 847B

Photofact 4717-5, Set 27

"Intermittent operation. Tapping on the 7F8 would cause the set to cut in and out, but the tube tested o.k. The trouble was found in the first I.F.

"In one case, one of the bus wires rubbed the coil; in another, there was a bad joint from the coil to the bus wire. Resoldering and bending the bus wire fixed these sets."

Submitted by: Mr. Leslie M. Scofield, 15858 Hesperian Blvd., San Lorenzo, Calif.

★ ★

MOTOROLA FD6 (FORD)

Photofact 467-20, Set 7

"Complaint: Set is inoperative. Normal operation can be obtained on the bench with the bottom cover removed.

"Cause: The sheet metal screw used to secure the cover is just long enough to touch the 100,000 ohm carbon 6SA7 grid resistor, PHOTOFACT Item 31.

"Remedy: Move this resistor carefully away from the side wall of the set."

Submitted by: Mr. Lester M. Lang, Radio Service Company, 428 Main Street, East Greenwich, R. I.

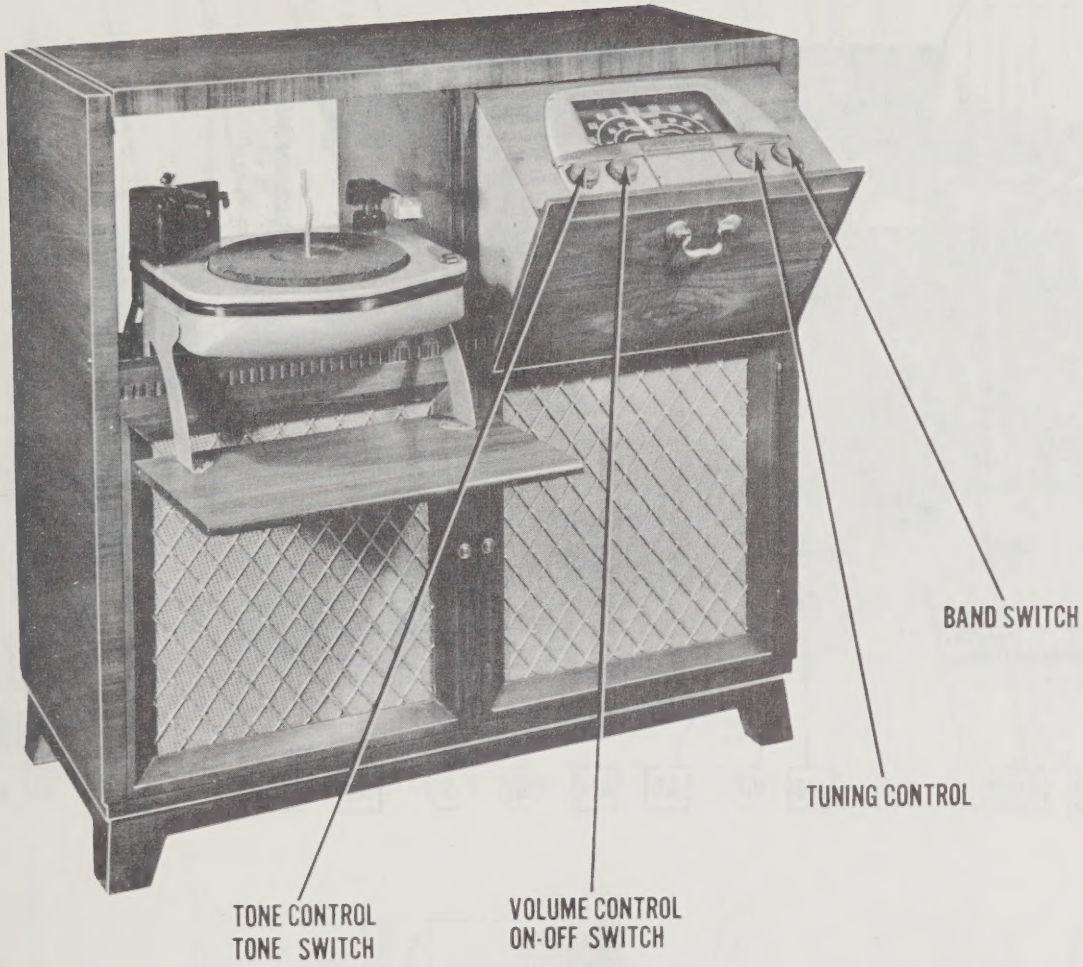
PUBLICATION DATES

When will other sets of PHOTOFACT Folders be published?

Volume 4—Set No. 33	**February 20**
Volume 4—Set No. 34	**February 20**
Volume 4—Set No. 35	**March 20**
Volume 4—Set No. 36	**March 20**

If you have been unable to get any issues of PHOTOFACT *Folder Sets, send your order and money directly to us and we will see that you are supplied.*

ADMIRAL CHASSIS
MODEL 9A1



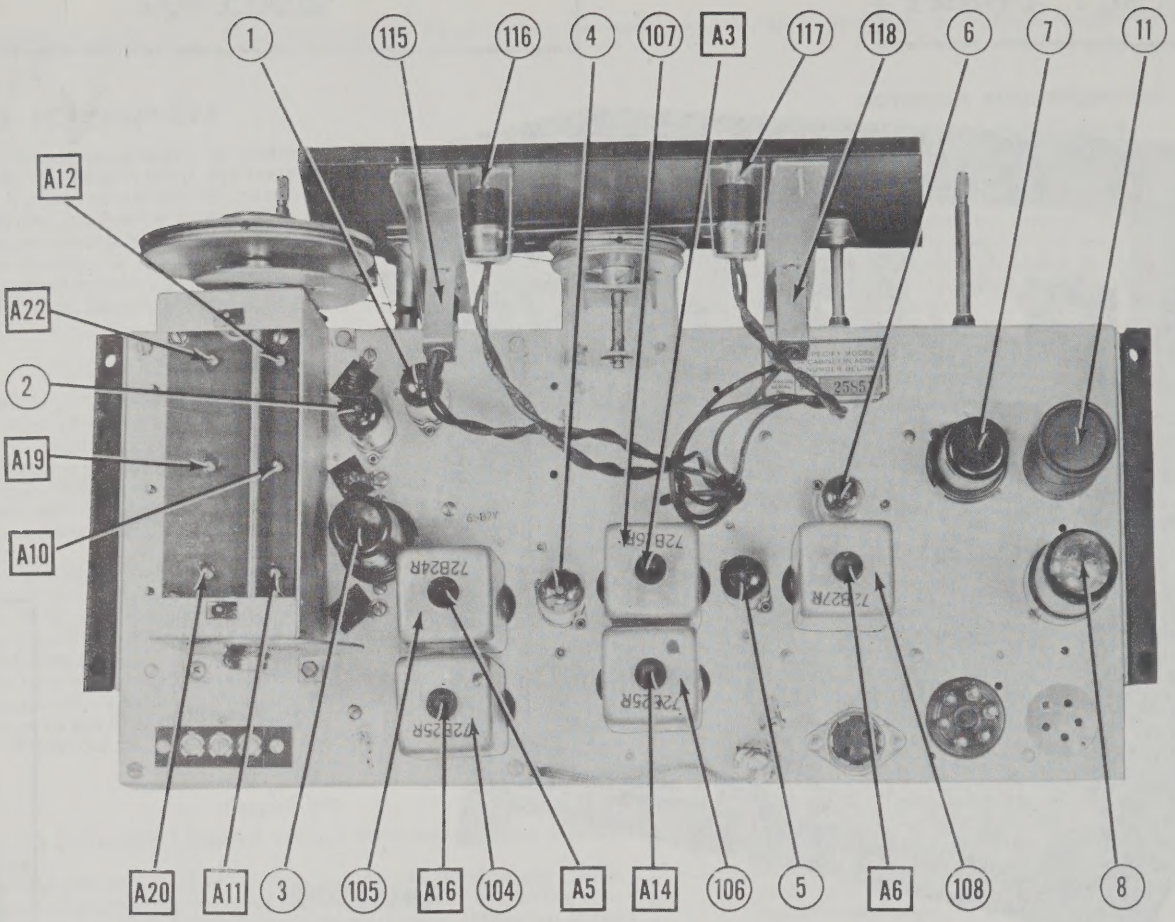
ADMIRAL CHASSIS
MODEL 9A1

ADMIRAL MODEL 7C73

TRADE NAME	Admiral, Model 7C73 (Ch. 9A1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio AM-FM Superheterodyne with Loop Antenna
TUBES (NINE)	Types, 6BA6 FM RF Amp., 6BA6 RF Amp., 6SB7Y Converter, 6BA6 1st IF Amp., 6BA6 AM Det.-AVC, 2nd FM IF Amp., 6AL5 Ratio Detector, 6SJ7 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	.95 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	540-1605KC FREQ. MOD. 87.5-108.5MC

HOWARD W. SAMS & CO., INC. **Indianapolis 6, Indiana**

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1948 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."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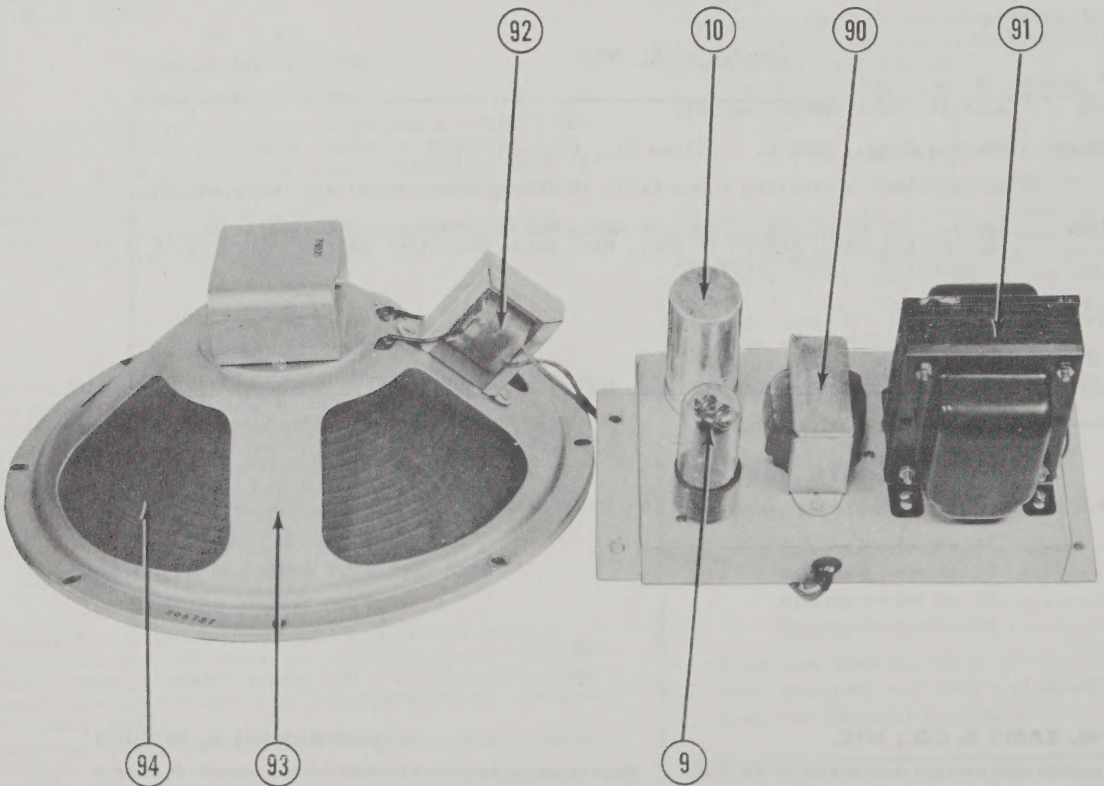
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	6BA6	6BA6	7BK	Grounded grid amplifier
2	RF Amp.	6BA6	6BA6	7BK	
3	Converter	6SB7Y	6SB7Y	8R	
4	1st IF Amp.	6BA6	6BA6	7BK	
5	AM Det.-AVC-2nd FM IF Amp.	6BA6	6BA6	7BK	
6	Ratio Det.	6AL5	6AL5	6BT	
7	AF Amp.	6SJ7	6SJ7	8N	
8	Power Output	6V6GT	6V6GT	7AC	
9	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	30	350	67C6-22	DY-2x30-450	EL-240	AF88J	UP3345	Filter
B	30	350						"
11A	30	350	67C7-7	DY-2x30-450	EL-32	AF44J	UP3345	■ Filter
B	20	250						▲ Cathode Bypass
12	4	150	67A4-2		TA-55		BR550	Stabilizing Cap.
13	.002	600	64B4-14	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass
14	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
15	.005	600	64B1-12	S-6-005	TC-25	684-005	DT6D5	Tone Comp.
16	.2	400	64B1-22	S-4-2	TC-2	484-.2	DT6P2	Screen Bypass
17	.005	600	64B1-12	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
18	.005	600	64B1-12	S-6-005	TC-25	684-005	DT6D5	" "
19	.05	200	64B1-32	S-4-05	TC-15	484-05	DT4S5	Tone Comp.
20	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	" "
21	.005	600	64B1-12	S-6-005	TC-25	684-005	DT6D5	" "
22	.005	600	64B1-12	S-6-005	TC-25	684-005	DT6D5	" "
23	.2	400	64B1-19	S-4-2	TC-2	484-.2	DT6P2	Pickup Decoupling
24	.002	600	64B1-14	S-6-002	TC-22	684-002	DT6D2	De-emphasis
25	.05	400	64B1-22	S-4-05	TC-15	484-05	DT4S5	2nd IF Plate Decoupling
26	.05	400	64B1-22	S-4-05	TC-15	484-05	DT4S5	2nd IF Screen Bypass
27	.1	400	64B1-20	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Power Supply
28	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	1st IF Screen Bypass
29	.05	200	64B1-32	S-4-05	TC-15	484-05	DT4S5	AVC Filter
30	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	" "
31	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	Conv. Decoupling
32	.005	600	65B1-12	S-6-005	TC-25	684-005	DT6D5	Filament Bypass
33	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	" "
34	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	Decoupling
35	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	1st RF Plate Decoup.
36	1000		65B5-33	MO.3-21	1FM-21	1468-001	1W5D1	Audio Coupling
37	100		65B6-19	MO.5-31	1FM-31	1468-0001	5W5T1	Diode Load Cap.
38	100		65B6-19	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
39	5000		65B9-53	MW.5-25	1FM-25	1467-005	1D5D5	Conv. Screen Bypass
40	100		65B6-19	MO.5-31	1FM-31	1468-001	5W5T1	" " "
41	25		65B6-15	MO.5-425	1FM-44	1468-000025	5W5Q25	RF Coupling
42	50		65B6-13	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Coupling
43	200		65B6-20	MO.5-32	1FM-32	1468-0002	5W5T2	Conv. Cathode Bypass
44	27		65B6-17	MO.5-43	1FM-44	1468-000025	5W5Q25	Osc. Feedback
45	180		65B6-23	MO.5-32	1FM-32	1468-0002	5W5T2	Osc. Feedback
46	39		65B6-14	MO.5-44	1FM-44	1468-00004	5W5Q4	RF Coupling
47	40		65B6-22	MO.5-44	1FM-44	1468-00004	5W5Q4	2nd RF Plate Decoup.
48	200		65B5-21	MO.5-32	1FM-32	1468-0002	5W5T2	2nd RF Screen Bypass
49	2000		65B5-37	MW.5-22	1FM-22	1467-002	1W5T2	Conv. Cathode Bypass
50	300		65B1-24	MOS.5-33	MS-33	1469-0003	2R5T3	Fixed Trimmer
51	35		65B6-14	MO.5-44	1FM-44	1468-00004	5W5Q4	RF Coupling
52	1000		65B5-33	MO.3-21	1FM-21	1468-001	1W5D1	FM Ant. Coupling
53	500		65B5-27	MO.5-35	1FM-35	1468-0005	5W5T5	RF Coupling
54	27		65B6-17	MO.5-43	1FM-44	1468-000025	5W5Q3	Fixed Trimmer
55	500		65B5-27	MO.5-35	1FM-35	1468-0005	5W5T5	Tone Comp.
120	200		65B5-21	MO.5-32	1FM-32	1468-0002	5W5T2	AVC Filter

DATE 1/48 SET #32 FOLDER #432-1

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
56A	1 Meg.	½	75B3-4	D18-137XX		Volume Control tapped @ 300KΩ & 600KΩ
B	Shaft		Not Req.	E		Attach to 56A per instructions
C	Switch		" "	41		" " " " "
57A	2 Meg.	½	75B1-14	D13-139	AM-66-Z	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to 57A per instructions
C	Switch		" "	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
58	100Ω	½	60B8-101	BW-½-100	Br.-Blk.-Br. 1st RF Cathode
59	330Ω	½	60B8-331	BW-½-330	Or.-Or.-Br. 1st RF Decoupling
60	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. 2nd RF Grid
61	39KΩ	1	60B14-393	BTA-39K	Or.-White-Or. 2nd RF Screen Dropping
62	4700Ω	1	60B14-472	BTA-4700	Yl.-Vi.-Red 2nd RF Plate Decoupling
63	33KΩ	½	60B8-333	BTS-33K	Or.-Or.-Or. Converter Grid
64	18KΩ	2	60B20-183	BT-2-18K	Br.-Gray-Or. Converter Screen Dropping
65	47KΩ	½	60B8-473	BTS-47K	Yl.-Vi.-Or. Oscillator Grid
66	120KΩ	½	60B8-124	BTS-120K	Br.-Red-Yl. AVC Network
67	18KΩ	1	60B14-183	BTA-18K	Br.-Gray-Or. 1st IF Screen Dropping
68	22KΩ	1	60B14-223	BTA-22K	Red-Red-Or. 1st IF Screen Bleeder
69	120KΩ	½	60B8-124	BTS-120K	Br.-Red-Yl. Phono Voltage Divider
70	100KΩ	½	60B8-104	BTS-100K	Br.-Blk.-Yl. Phono Voltage Divider
71	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. AVC Network
72	220KΩ	½	60B8-224	BTS-220K	Red-Red-Yl. Diode Load
73	82KΩ	½	60B8-823	BTS-82K	Gray-Red-Or. Diode Load
74	8200Ω	2	60B20-822	BT-2-8200	Gray-Red-Red Voltage Dropping
75	2200Ω	1	60B14-222	BTA-2200	Red-Red-Red Decoupling
76	390Ω	½	60B7-391	BW-½-390	Or.-White-Br. Balancing
77	27KΩ	½	60B8-273	BTS-27K	Red-Vi.-Or. De-emphasis
78	6800Ω	½	60B7-682	BTS-6800	Blue-Gray-Red Diode Load
79	6800Ω	½	60B7-682	BTS-6800	Blue-Gray-Red " "
80	100Ω	½	60B5-101	BW-½-100	Br.-Blk.-Br. Decoupling
81	390Ω	2	60B20-391	BW-2-390	Or.-White-Br. Filter
82	47KΩ	½	60B8-473	BTS-47K	Yl.-Vi.-Or. Tone Compensation
83	10KΩ	½	60B8-103	BTS-10K	Br.-Blk.-Or. " "
84	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
85	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. AF Screen Dropping
86	100KΩ	½	60B8-104	BTS-100K	Br.-Blk.-Yl. AF Plate Load
87	2.2 Meg.	½	60B8-225	BTS-2.2 Meg.	Red-Red-Grn. Feedback
88	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
89	390Ω	1	60B14-391	BW-1-390	Or.-White-Br. Output Cathode

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: ADMIRAL PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	INSTALLATION NOTES
90	.09A	150Ω	5 Henries	74A9	C-1709	T20C53	C-2993*	*Drill new mounting holes.

TRANSFORMER (POWER)

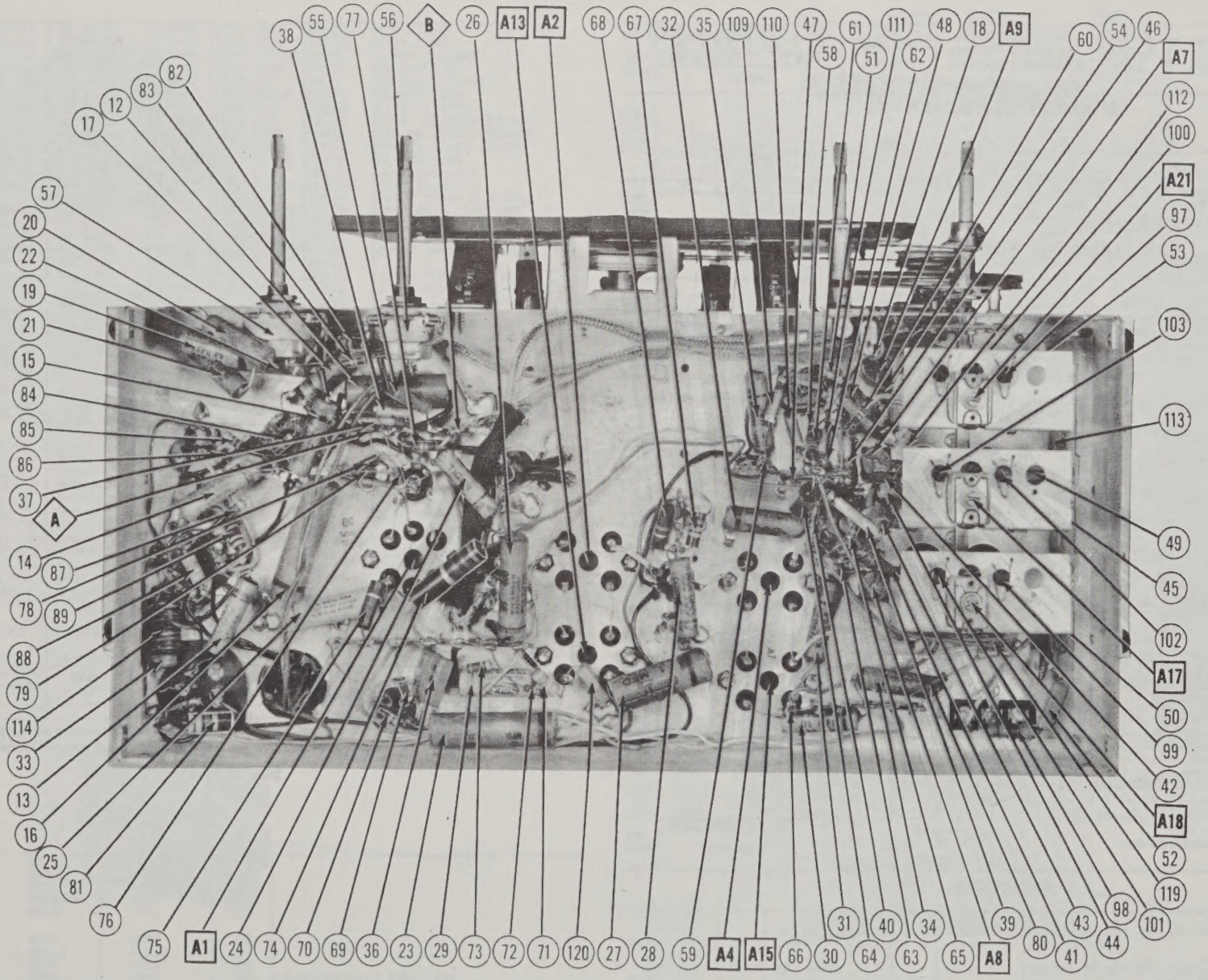
ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
91	117V AC @ .95A	600V CT @ .09A	5.2V AC @ 2.0A	6.3V AC @ 3.2A	80B2	P-4079*	T22R32*	P-3152*

*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
92	3900Ω	3.6Ω	350Ω	.35Ω	98A22	A-2901	T22S87	A-3823	

ADMIRAL CHASSIS MODEL 9A1 PAGE 3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PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ADMIRAL PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-102†		†Replace output transformer to match 6-8Ω voice coil.
93	PM	3.6Ω	78B21	Mod. P12-S		
	CONE DIA.	VC DIA.				
94	11½"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	MEISSNER PART No.
95	BC Loop		.1Ω	95A18	
96	FM Loop			AB128	
97	BC Ant.Coil		8Ω	AC105-2	
98	FM Ant. Chk.		0Ω	AB103-33	
99	BC RF Coil		3.8Ω	AB100-1	
100	FM RF Coil		0Ω	AA-122	
101	FM Conv. Coil		0Ω	AA-122	
102	BC Osc.Coil		7Ω	AC-101-2	
103	FM " "		0Ω	AA-123	
104	AM Input IF	7.5Ω	7.5Ω	72B25	16-6658
105	FM " "	.5Ω	0Ω	72B24	
106	AM OutputIF	7.5Ω	7.5Ω	72B25	16-6660
107	FM " "	1Ω	.1Ω	72B26	
108	Ratio Det.	2Ω	.1Ω	72B27	
109	1st RF Plate Choke		.8Ω	AB103-35	
110	1st RF Cath. Choke		.8Ω	AB103-35	
111	2nd RF Plate Choke		2Ω	AB103-36	
112	FM Osc. Cath. Choke		.2Ω	AB103-34	
113	AM Osc.Cath. Choke		16Ω	AB103-1	
114	Filament Chk.		.2Ω		

DIAL LIGHT

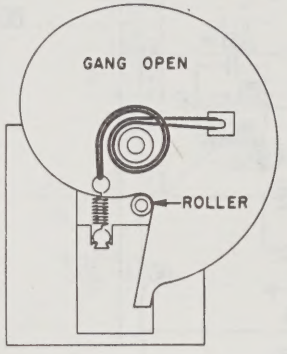
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ADMIRAL PART No.		INSTALLATION NOTES
115-118	Bayonet	6-8	0.15	Brown	81A1-8		Type 47

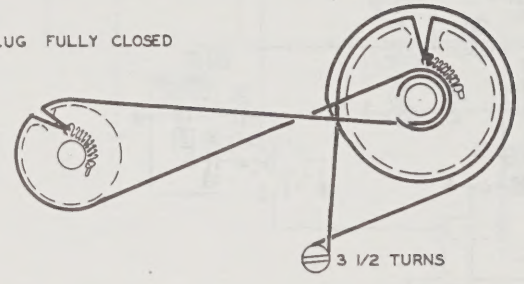
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
119	Phono-Band Sw.	76C11-3	Ant. Section
		76C11-5	RF Section
		76C11-4	Osc. Section
		76C11-6	IF Section
		76C11-2	Audio Section
		76C11-1	Shaft Assy.
	Trimmer	66A22-1	A7, A8, A9
	"	66A12-5	A17, A21
	"	66A12-1	A18
	Dial Pointer	A1477	

DISASSEMBLY INSTRUCTIONS

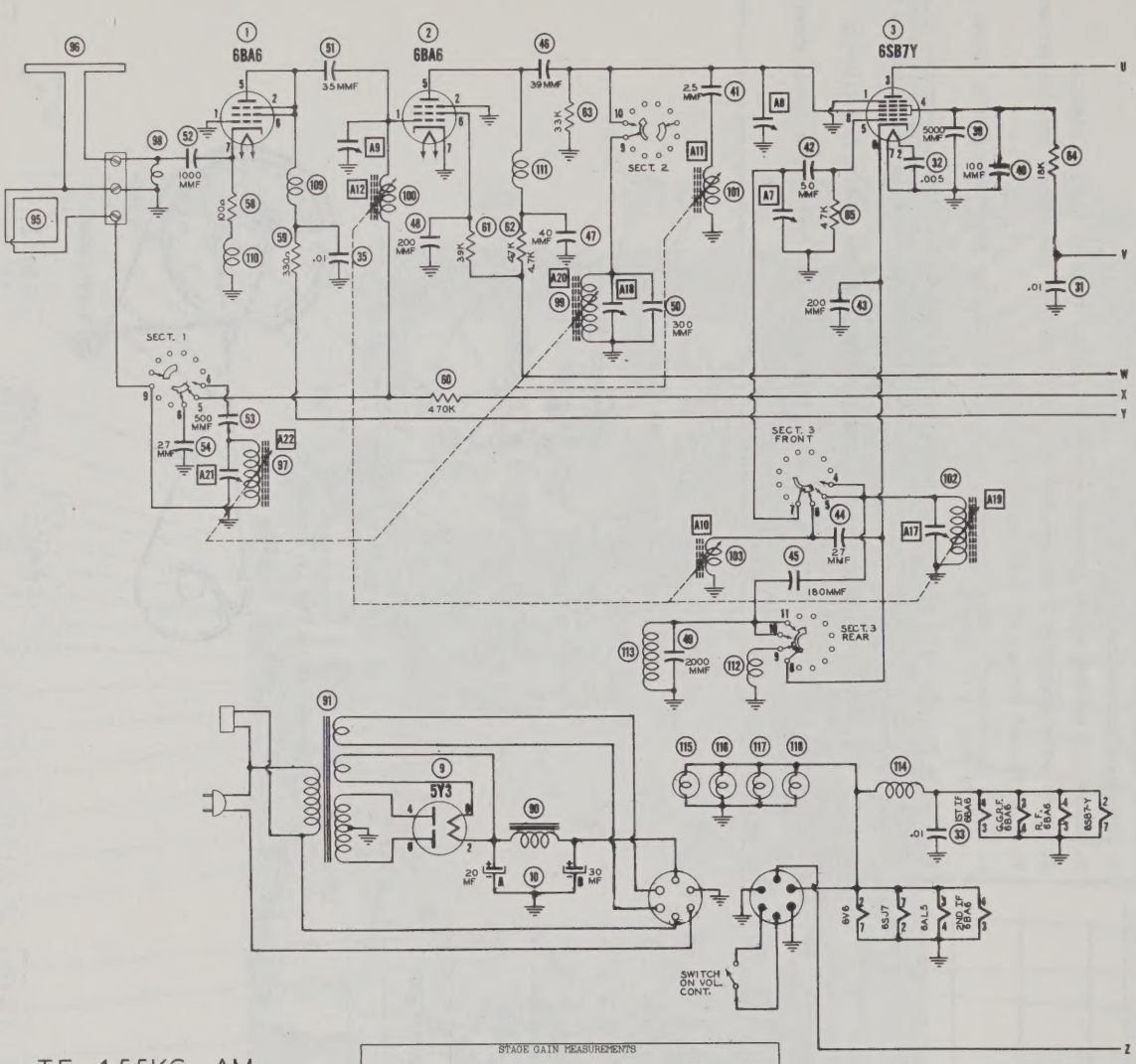
1. Remove speaker plug from receiver chassis.
2. Remove power supply plug from receiver chassis.
3. Remove phono-pickup plug from receiver chassis.
4. Disconnect phono-motor plug.
5. Remove loop antenna and FM antenna leads from terminal strip on receiver chassis.
6. Remove screw and washer from both tilt-out spring studs on each side of the tilt-out assembly.
7. Slip tilt-out springs off their respective studs.
8. Remove four screws holding tie-bar to tilt-out arms. Tie bar then hangs free on copper braid used to bond it to chassis.
9. Stand at end of cabinet (next to radio compartment) and hold the tilt-out door open slightly with the left hand. Use screwdriver to pry both tilt out arms off their respective studs. Then push tilt out arms toward front of cabinet. Tilt out assembly can then be removed by tripping forward slightly and pulling it straight out.
10. Remove four screws holding chassis to tilt-out assembly. Remove chassis from tilt-out assembly.
11. Remove four hex nuts holding power supply chassis in cabinet. Remove power supply chassis from cabinet.
12. Remove four hex nuts holding speaker in cabinet. Remove speaker.





DIAL CORD DRIVE

DATE 1/48 SET #32 FOLDER #482-1



IF=455KC AM

IF=10.7MC FM

RADIO PHONO SWITCH SHOWN IN FM POSITION. (MAX. CLOCKWISE POSITION.)

SWITCH SEQUENCE:
1 PHONO
2 AM
3 FM

STAGE GAIN MEASUREMENTS

RF GRID TO CONV. GRID	8X		600KC
CONV. GAIN	70X	IN	600KC
		OUT	455KC
1st IF TRANS.	.9X		455KC
IF TUBE	200X		455KC
2nd IF TRANS.	.7X		455KC
AUDIO	90X		400∿
OUTPUT	17X		400∿

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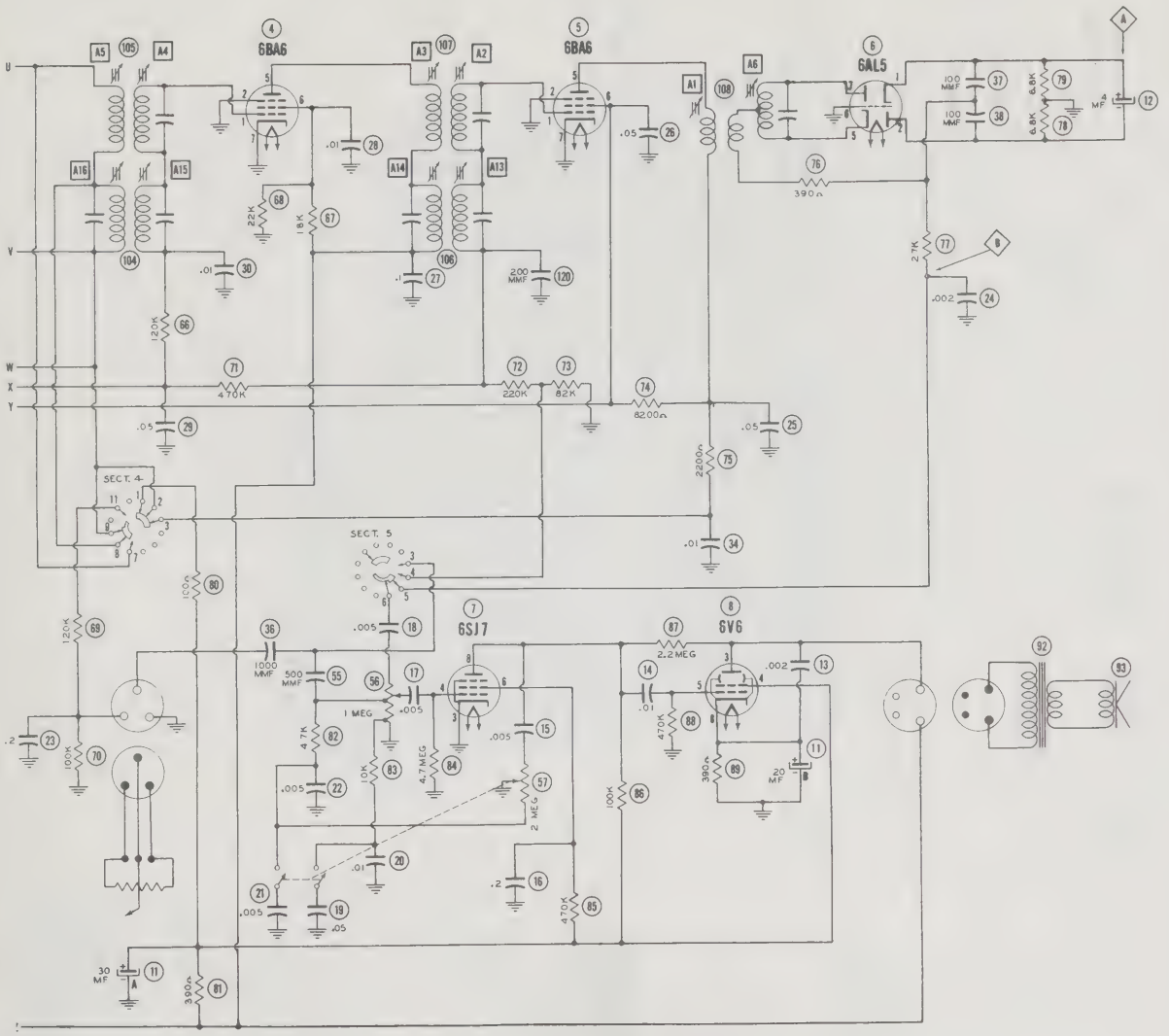
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	6BA6	0V.	80VDC	6.3VAC	0V.	80VDC	80VDC	1.2VDC	-
2	6BA6	0V.	0V.	0V.	6.3VAC	225VDC	100VDC	0V.	-
3	6SB7-Y	0V.	6.3VAC	285VDC	110VDC	-11VDC§	.2VDC	0V.	0V.
4	6BA6	-.5VDC	0V.	0V.	6.3VAC	285VDC	123VDC	0V.	-
5A	6BA6	-.4VDC	0V.	0V.	6.3VAC	0V.	0V.	0V.	-
‡ 5B	6BA6	-1.8VDC	0V.	0V.	6.3VAC	200VDC	80VDC	0V.	-
‡ 6	6AL5	.4VDC	-.4VDC	6.3VAC	0V.	0V.	0V.	0V.	-
7	6SJ7	0V.	0V.	0V.	-.6VDC	0V.	45VDC	6.3VAC	90VDC
8	6V6GT	0V.	6.3VAC	280VDC	285VDC	0V.	0V.	0V.	14.6VDC
9	5Y3GT	0V.	295VAC	0V.	300VAC	0V.	300VAC	0V.	295VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	6BA6	0Ω	50KΩ	.1Ω	0Ω	50KΩ	50KΩ	100Ω	-
2	6BA6	1.2 Meg.	0Ω	0Ω	.1Ω	40KΩ	80KΩ	0Ω	-
3	6SB7-Y	0Ω	.1Ω	40KΩ	60KΩ	45KΩ	1ΜΩ	0Ω	4Ω
4	6BA6	990KΩ	0Ω	0Ω	.1Ω	40KΩ	20KΩ	0Ω	-
5A	6BA6	300KΩ	0Ω	0Ω	.1Ω	INF.	INF.	0Ω	-
‡ 5B	6BA6	300KΩ	0Ω	0Ω	.1Ω	40KΩ	50KΩ	0Ω	-
‡ 6	6AL5	6.8KΩ	6.8KΩ	.1Ω	0Ω	INF.	0Ω	INF.	-
7	6SJ7	0Ω	0Ω	0Ω	5 Meg.	0Ω	500KΩ	.1Ω	140KΩ
8	6V6GT	0Ω	.1Ω	40KΩ	40KΩ	480KΩ	INF.	0Ω	360Ω
9	5Y3GT	INF.	4KΩ	INF.	90Ω	INF.	95Ω	INF.	40KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.
§TAKEN WITH VACUUM TUBE VOLTMETER.

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The FM section of this receiver should be aligned only with an AM signal generator and a vacuum tube voltmeter.

Check dial cord drawing for correct positioning of pointer, drums and rollers. Check set screws that hold tuning drum to shaft to see if they are tight and that the drum has not slipped on the shaft.

With tuning control turned completely clockwise all slugs should extend 1½" from coil form. If there is any serious deviation or if any tampering has been done turn adjusting screws until each core extends proper distance.

If it becomes necessary to change a tuning slug proceed in the following nammer: Turn tuning control completely clockwise and remove old slug. Set slug adjusting screw about halfway down. Place new slug 1½" above coil form and solder in place making certain it does not slip and that the slug wire is straight. Then realign as in alignment procedure below.

FM IF AND RATIO DETECTOR ALIGNMENT

Dress VTVM leads away from signal generator leads and chassis wiring.

Attenuate signal generator output to maintain peak deflection of 1.5 volts on all IF adjustments with exception of Step 4.

FM antenna should be disconnected during alignment.

Speaker must be connected.

Care should be exercised in adjusting IF slugs to prevent chipping or splitting of slugs or slipping of slugs into centers of coil forms. If slug should slip into center of coil form it will be necessary to remove the opposite slug. Then using a thin rod and screw driver, "Jockey" dislocated slug until it re-engages the threads in the coil form. If a slug should become stripped or cracked it may be removed by removing the slug opposite it and forcing it out with a thin screwdriver.

Steps 1 & 2 may be omitted if set is not badly out of alignment so signal comes through in Step 3.

To check IF selectivity curve as required in Step 3 proceed as follows:

a. Adjust output of sig. gen. for exactly +1.5 volts deflection of VTVM with sig. gen. set at 10.7MC.
b. Tune sig. gen. above 10.7MC until VTVM read exactly +1.0 volt. Note accurately freq. of sig. gen.
c. Tune sig. gen. below 10.7MC until VTVM reads exactly +1.0 volt. Note accurately freq. of sig. gen.
d. Add sig. gen. frequencies of B & C and divide by 2. This is the center IF frequency to be used in Step 4.
e. Tune sig. gen. above and below 10.7MC and note voltage reading on VTVM at different frequency points and plot shape of selectivity curve. Curves similar to Fig. 1, 2 & 3 are satisfactory. If a curve such as Fig. 4 is obtained repeating of Steps 1, 2 and 3 will be necessary.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to Pin 1 (grid) 6BA6 2nd IF Tube (5). Low side to chassis.	10.7MC (Unmodulated)	FM	Tuning slugs fully out.	DC probe to Point A. Common to chassis	A1	Connect 3300Ω carbon resistors across secondaries of FM 1st and 2nd IF transformers (106 & 107). Adjust A1 for maximum deflection.
2	.01 MFD	High side to Pin 1 (grid) 6BA6 1st IF Tube (4). Low side to chassis.	"	"	"	"	A2,A3	Adjust for maximum deflection.
3	Direct	Across terminals 1 & 2 of ext. ant. terminal board.	"	"	"	"	A4,A5	Connect 50MMFD cap. across cap (47) making leads as short as possible Adjust A4 & A5 for maximum deflection. Then repeak A1, A2, A3, A4 & A5 for maximum deflection. Remove 3300Ω resistors from Steps 1 & 2. Check IF selectivity curve per prealignment instructions.
4	Direct	"	IF center freq. found in preceeding Step.	"	"	DC probe to Point B. Common to chassis	A6	Adjust for zero deflection. The correct peak is between a pos. & neg. maximum. If this or any of the preceeding adjustments were very far off Steps 3 & 4 should be repeated. Remove 50 MMFD. cap. from Step 3.

FM RF ALIGNMENT

Alignment of FM RF section will require re-alignment of AM RF section due to common trimmer capacities during AM operation. AM RF section can be aligned, however, without affecting FM alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	270Ω carbon res.	High side to term. 1 of ext. ant. terminal board. Low side to terminal 2.	108.5MC (unmodulated)	FM	Tuning slugs fully out.	DC probe to Point A. Common to chassis	A7,A8, A9	Adjust for maximum deflection.
6	"	"	102MC	"	102MC	"	A10, A11,A12	Adjust for maximum deflection. Repeat Steps 5 & 6 until no further improvement can be made.

AM ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

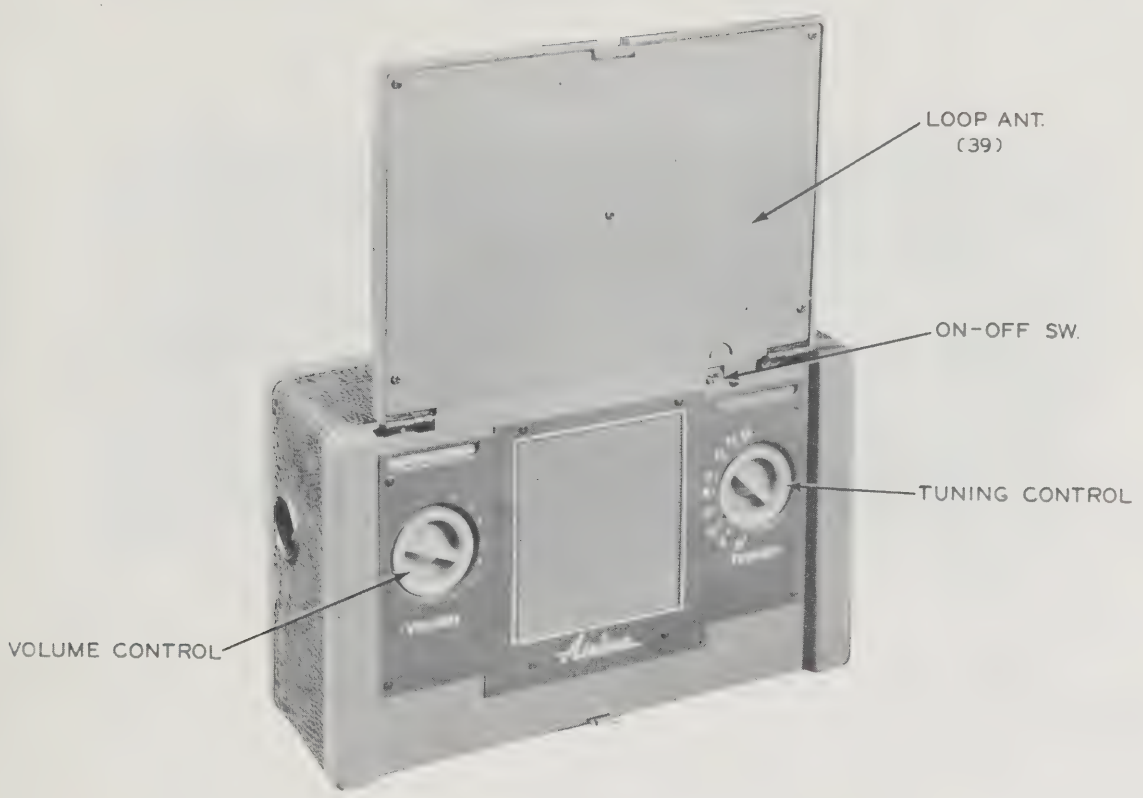
During Steps 10 & 11 set chassis on table next to back of cabinet and connect loop to receiver.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7	.1 MFD.	High side to Pin 8 (grid) 6SB7Y. Low side to chassis.	455KC	BC	Tuning slugs fully out.	Across voice coil	A13,A14 A15,A16	Adjust for maximum output
8	Direct	High side to terminal 3 of ext. ant. terminal board. Low side to term. 2.	1605KC	"	"	"	A17,A18	" " " "
9	Direct	"	1300KC	"	1300KC	"	A19,A20	Adjust for maximum output. Repeat Steps 8 & 9 until no further improvement can be made.
10	10MMFD (or wrap several turns of gen. lead around white loop lead).	"	1605KC	"	Tune for maximum output.	"	A21	Adjust for maximum output
11	"	"	1300KC	"	"	"	A22	" " " "

TYPICAL SELECTIVITY CURVES

FIG. 1 FIG. 2 FIG. 3 FIG. 4

AIRLINE MODEL 74WG-1057A
BATTERY-LINE OPERATED



AIRLINE MODEL 74WG-1057A
BATTERY-LINE OPERATED

AIRLINE MODEL 74WG-1057A

TRADE NAME	Airline, Model 74WG-1057A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Ant.
TUBES (FOUR)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output
POWER SUPPLY RATING	105-125 Volts AC-DC or 1.5 Volts "A" Supply and 60 Volts "B" Supply in Pack Form .10 Amp. @ 117 Volts AC or 270MA @ 1.5 Volts DC and 10.7MA @ 60 Volts DC
TUNING RANGE--BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Volume control should be at maximum position output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin #6 of 1R5. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Temporarily solder 50KΩ resistor across two ant. leads on chassis. Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2	.1 MFD.	High side to door hinge above tuning cap. Low side to B-.	1610KC	"	"	A5	Replace chassis in case. Remove temporary resistor and connect loop. Adjust A5 for maximum output.
3	.1 MFD.	"	1500KC	Tune for maximum output.	"		Set knob to 1500KC mark.
4		Loop	1400KC	"	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. **Indianapolis 6, Indiana**

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DATE 1/48 SET #32 FOLDER #482-2

PARTS LIST AND DESCRIPTIONS

AIRLINE MODEL 74WG-1087A
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	45X357	DSB-2x40-150	TA-440		EZ42215‡	Filter - Grn.
B	40	150						" - Red
C	200	12		M-250-12	UHC-212		BRH1225	Filament Bypass - Yl.
6	.01	400	46X392	MPH-4-01	TC-11	484-01	DT4S1	Line Filter
7	.1	200	D67104	S-2-1	TC-1	484-.1	ZN1P1	Line Isolation
8	.005	200	B66502	QA1M-2-.006	TC-25	338T-005	Z21D6	Output Plate Bypass
9	.001	200	B67102	QA1M-2-.001	TC-21	338T-001	Z21D1	Audio Coupling
10	.001	200	46X334	QA1M-2-.001	TC-21	338T-001	Z21D1	" "
11	.05	200	46X391	S-4-05	TC-15	484-05	ZN1S5	AF Screen Bypass
12	.1	120	46X330	S-2-1	TC-1	484-.1	ZN1P1	Filament Bypass
13	.05	200	B66503	S-4-05	TC-15	484-05	ZN1S5	" "
14	.05	200	B66503	S-4-05	TC-15	484-05	ZN1S5	Conv. Screen Decoup.
15	.1	200	46X390	S-2-1	TC-1	484-.1	ZN1P1	Filament Bypass
16	47		47X495	MO.5-45	1FM-45	1468-00005	5W5T5	AF Plate Bypass
17	47		47X495	MO.5-45	1FM-45	1468-00005	5W5T5	Diode RF Filter †
18	47		47X495	MO.5-45	1FM-45	1468-00005	5W5T5	" " " †

†In some models Items 17, 18 and 23 consist of single resistor - Capacitor Combination Part #76X1.
‡Parallel sections to obtain desired capacity.

CONTROLS

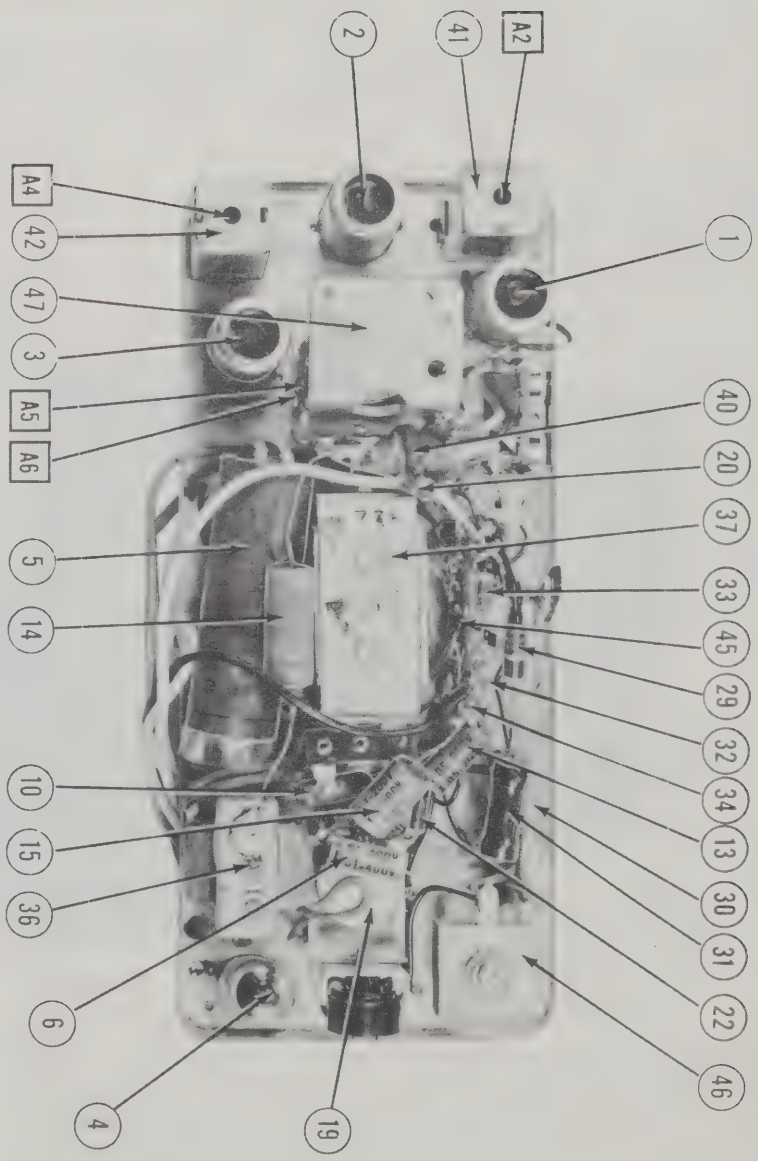
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19	1 Meg.	½	36X305			Volume Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
20	6800Ω	½	B68682	BTS-6800	Blue-Gray-Red Converter Screen Dropping
21	100KΩ	½	B64104	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
22	2.2 Meg.	½	B65225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
23	47KΩ	½	B64473	BTS-47K	Yl.-Vl.-Or. Diode RF Filter †
24	10 Meg.	½	B65106	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
25	3.9 Meg.	½	B64395	BTS-3.9 Meg.	Or.-White-Grn. AF Screen Dropping
26	1 Meg.	½	B65105	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
27	2.2 Meg.	½	B65225	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
28	680Ω	½	B64681	BTS-680	Blue-Gray-Br. Bias
29	2200Ω	1	C64222	BTA-2200	Red-Red-Red Filter
30	200Ω	5	43X222		Surge Limiter
31	1750Ω	4	43X107		Filament Dropping
32	1200Ω	½	B64122	BTS-1200	Br.-Red-Red Filament String
33	270Ω	½	B64271	BW-½-270	Red-Vl.-Br. Filament String
34	120Ω	½	B64121	BW-½-120	Br.-Red-Br. Filament String
35	220Ω	½	B64221	BW-½-220	Red-Red-Br. Filament String

†In some models Items 17, 18 & 23 consist of single resistor - Capacitor Combination Part No. 76X1.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
36	3500Ω	3.1Ω	470Ω	1.1Ω	81X2[illegible]				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
37	PM	3.1Ω-	12A477			
	CONE DIA.	VC DIA.				
38	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
39	Loop Ant.		1.3Ω	9A1[illegible]22		
40	Osc. Coil	6.6Ω	2.3Ω	9A1920	14-1040	
41	Input IF	24.1Ω	22.8Ω	9A1[illegible]21	16-6668	
42	Output IF	24.1Ω	22.8Ω	9A1921	16-6669	

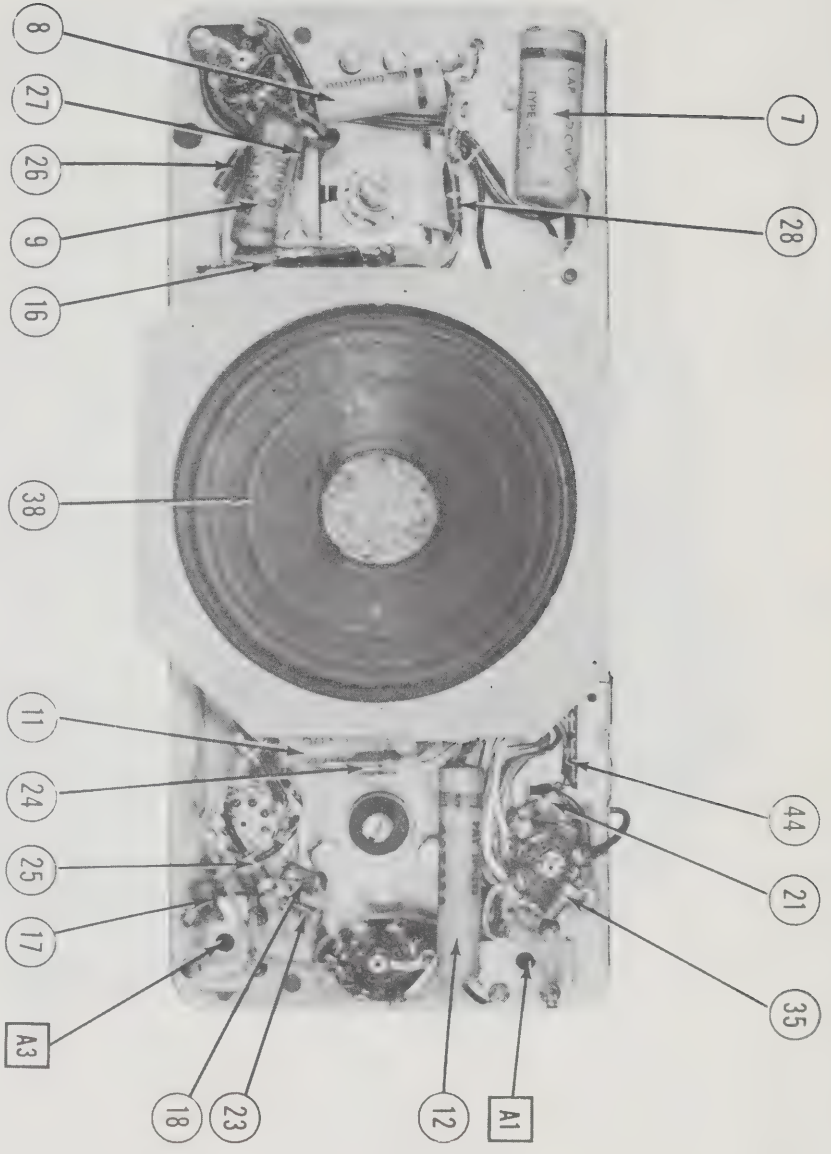
BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
43	1.5V "A" 60 V "B"	62-32				

MISCELLANEOUS

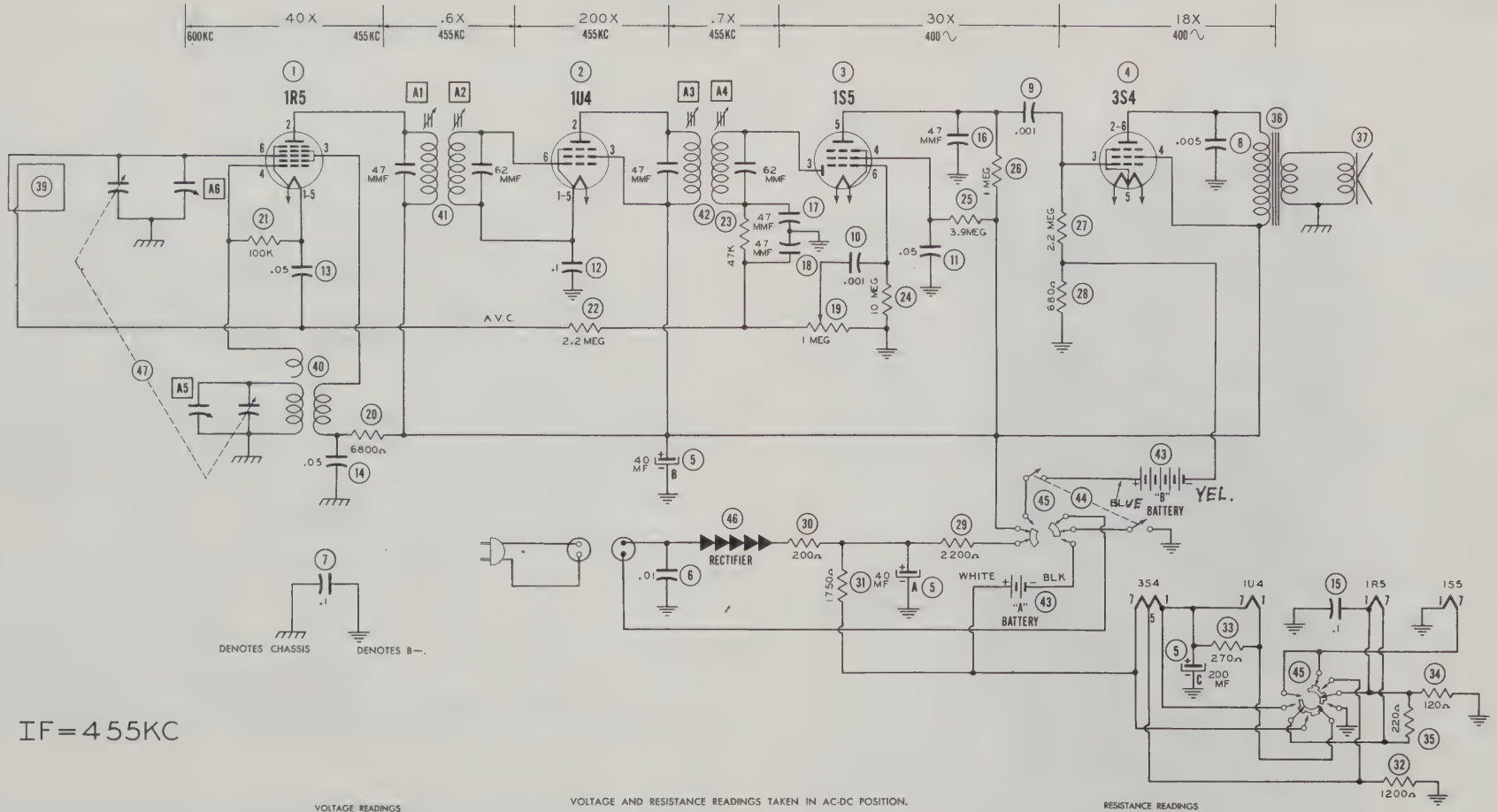
ITEM No.	PART NAME	AIRLINE PART No.	NOTES
44	Switch	2A201	On-Off
45	"	28A409	AC-DC-Batt.
46	Rectifier	66X7	Selenium
47	2 Gang Var. Cap. Knob	14A197 10A629	(25-384MMF, 23-147 MMF)

CHASSIS—BOTTOM VIEW



AIRLINE MODEL 74AG-10574
BATTERY-LINE OPERATED

AIRLINE MODEL 74AG-10574
BATTERY-LINE OPERATED



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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	1.2VDC	60VDC	46VDC	-11VDC§	1.2VDC	0V.	2.5VDC
2	1U4	2.6VDC	60VDC	60VDC	-1VDC	2.5VDC	2.5VDC	4.2VDC
3	1S5	0V.	0V.	-.1VDC	2.6VDC	6.2VDC	-.1VDC	1.2VDC
4	3S4	4.2VDC	55VDC	0V.	60VDC	5.5VDC	55VDC	6.8VDC

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	3.5KΩ	10.5KΩ	100KΩ	*	3 Meg.	*
2	1U4	*	3.5KΩ	3.5KΩ	1 Meg.	*	*	*
3	1S5	*	INF.	1 Meg.	4 Meg.	1 Meg.	10 Meg.	*
4	3S4	*	3.5KΩ	2.5 Meg.	3.5KΩ	*	3.5KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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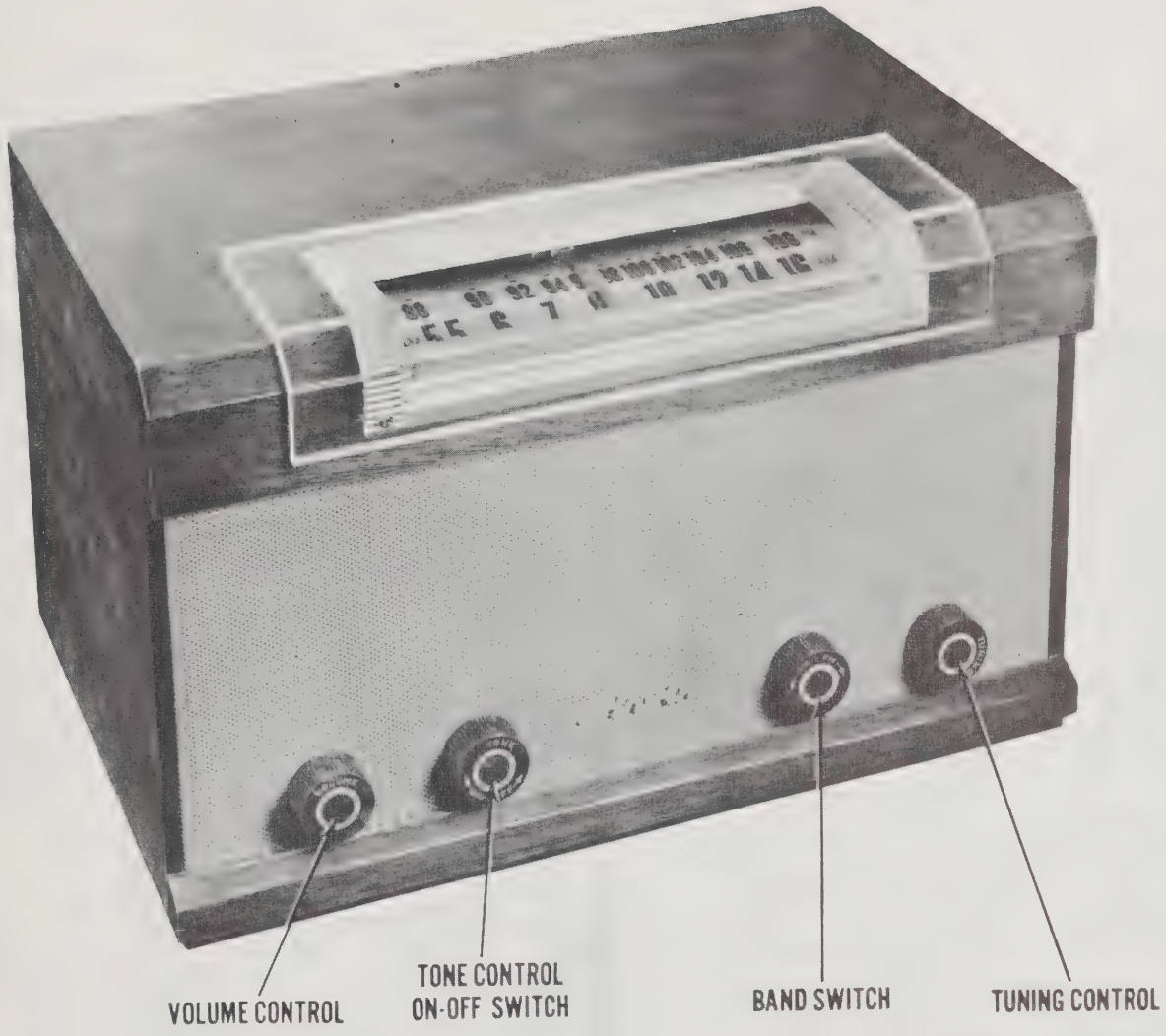
482-2

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to B-.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

ARVIN MODEL 182TFM
(Ch. #RE-237)



ARVIN MODEL 182TFM
(Ch. #RE-237)

ARVIN MODEL 182TFM (Ch. RE-237)

TRADE NAME	Arvin, Model 182TFM (Ch. RE-237)
MANUFACTURER	Noblitt-Sparks Industries, Inc., Columbus, Ind.
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Ant.
TUBES (EIGHT)	Types, 6C4 FM 1st RF Amp., 12BA6 FM 2nd RF Amp., 12BE6 Converter, 12BA6 1st IF Amp., 12BA6 2nd FM IF Amp., 6AQ6 Det.-AVC-AF, 12H6 FM Det.-AVC, 50L6GT Power Output.
POWER SUPPLY	105-125 Volts AC-DC
RATING	.38 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. **Indianapolis 6, Indiana**

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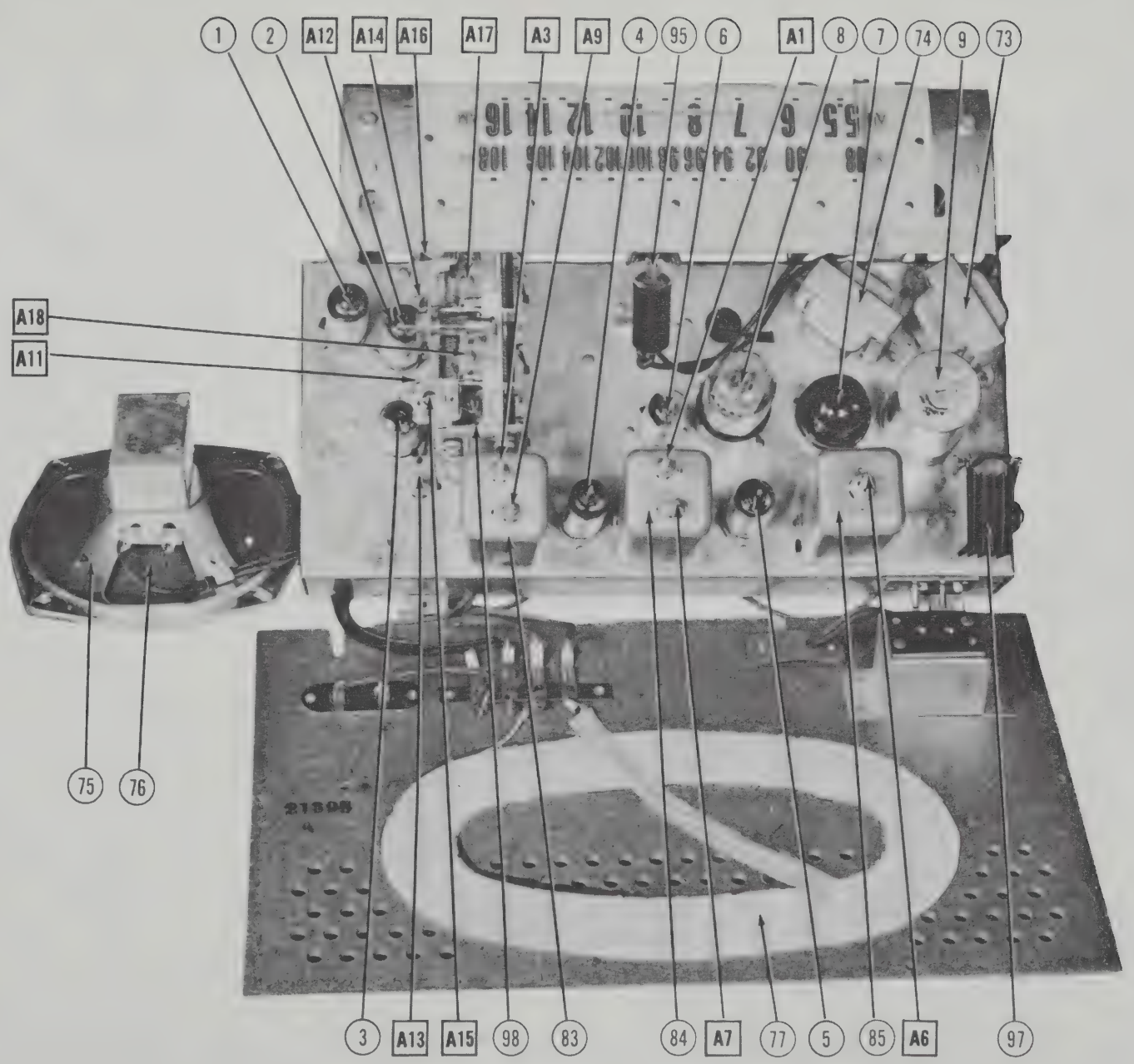
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM 1st RF Amp.	6C4	6C4	5BG	
2	FM 2nd RF Amp.	12BA6	12BA6	7BK	
3	Converter	12BE6	12BE6	7CH	
4	1st IF Amp.	12BA6	12BA6	7BK	
5	FM 2nd IF Amp.	12BA6	12BA6	7BK	
6	Det.-AVC-AF	6AQ6	6AQ6	7BC	
7	FM Det.-AVC	12H6	12H6	7A	
8	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	40	150		DY-8040B0-150	EL-4524	AF8-6D4A	BR4015	▲ Filter
B	40	150	A21402	M-40-150		PRS150/50		◓ "
C	80	150			TA-440		UP84Z15	■ "
D	20	25						Output Cathode Bypass
10	8	50	A21403	M-10-50	TA-51	PRS-50-10	BR105	Stabilizing Capacitor
11	.05	400	C20068-503	MH-4-05	TC-15	484-05	DT4S5	Line Filter
12	.005	600	C20069-502	S-6-005	TC-25	684-005	DT6D5	Output Plate Bypass
13	.005	600	C20067-502	S-6-005	TC-25	684-005	DT6D5	Tone Compensation
14	.05	400	C20068-503	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
15	.01	400	C20068-103	S-4-01	TC-11	484-01	DT4S1	" "
16	.05	400	C20067-503	S-4-05	TC-15	484-05	DT4S5	AVC Filter
17	250	500	C20065-251	MO.5-325	1FM-325	1468-00025	5W5T25	Output Grid Bypass
18	2000	350	C20203-202	MW.5-25	1FM-25	1467-002	1W5D2	De-emphasis - Cer.
19	50	500	C20205-5	MO.5-45	1FM-45	1468-00005	5W5J5	Diode Load Cap. - "
20	50	500	C20205-5	MO.5-45	1FM-45	1468-00005	5W5J5	" " " - "
21	5000	350	C20226-502	MW.5-25	1FM-25	1467-005	1D5D5	2nd IF Decoupling - "
22	5000	350	C20226-502	MW.5-25	1FM-25	1467-005	1D5D5	2nd IF Cathode Bypass "
23	100	500	C20204-101	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter "
24	100	500	C20204-101	MO.5-31	1FM-31	1468-0001	5W5T1	" " " - "
25	5000	350	C20226-502	MW.5-25	1FM-25	1467-005	1D5D5	1st IF Decoupling - "
26	5000	350	C20226-502	MW.5-25	1FM-25	1467-005	1D5D5	AVC Filter - "
27	5000	350	C20226-502	MW.5-25	1FM-25	1467-005	1D5D5	Converter Decoupling "
28	1000	350	C20226-102	MO.5-21	1FM-21	1468-001	1W5D1	Conv. Screen Bypass "
29	20	500	C20205-3		MS-42		5W5Z2	Conv. Plate Bypass "
30	27	500	C20204-270					Osc. Grid Cap. "
31	100	500	C20205-2	MO.5-31	1FM-31	1468-0001	5W5T1	Fixed Padder "
32	5000	350	C20226-502	MW.5-25	1FM-25	1467-005	1D5D5	RF Byp. Power Supply "
33	1000	350	C20226-102	MO.5-21	1FM-21	1468-001	1W5D1	2nd RF Decoupling "
34	10	500	C20204-100	MO.5-41	MS-41	1468-00001	5W5Z1	RF Coupling "
35	200	500	C20206-201	MO.5-32	1FM-32	1468-0002	5W5T2	Fixed Padder
36	50	500	C20204-500	MO.5-45	1FM-45	1468-00005	5W5J5	2nd RF Cath. Byp. "
37	50	500	C20204-500	MO.5-45	1FM-45	1468-00005	5W5J5	RF Coupling "
38	500	350	C20226-501	MO.5-35	1FM-35	1468-0005	5W5T5	2nd RF Decoupling
39	100	500	C20204-101	MO.5-31	1FM-31	1468-0001	5W5T1	Ant. Coupling "
40	1000	350	C20226-102	MO.5-21	1FM-21	1468-001	1W5D1	Ext. Ant. Isolation "
41	100	500	C20204-101	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling "
42	50	500	C20204-500	MO.5-45	1FM-45	1468-00005	5W5J5	Filament Bypass "§
43	1000	350	C20226-102	MO.5-21	1FM-21	1468-001	1W5D1	" " "
44	50	500	C20204-500	MO.5-45	1FM-45	1468-00005	5W5J5	" " "
45	50	500	C20204-500	MO.5-45	1FM-45	1468-00005	5W5J5	" " "
46	1000	350	C20226-102	MO.5-21	1FM-21	1468-001	1W5D1	AVC Filter "

§Not used in all models.
*Omit section marked ■.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
47A	1 Meg.	½	C24404-1	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 47A per instructions
48A	500KΩ	½	C21405-1	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to 48A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
49	1 Meg.	¼	C20060-105	BTS-1 Meg.	Br.-Blk.-Grn. 2nd RF Grid
50	1000Ω	¼	C20060-102	BTS-1000	Br.-Blk.-Red 1st RF Plate Decoupling
51	68Ω	¼	C20060-680	BW-½-68	Blue-Gray-Blk. 2nd RF Cathode
52	330Ω	¼	C20060-331	BW-½-330	Or.-Or.-Br. 2nd RF Decoupling
53	22KΩ	¼	C20060-223	BTS-22K	Red-Red-Or. Osc. Grid
54	330Ω	¼	C20060-331	BW-½-330	Or.-Or.-Br. Converter Decoupling
55	100KΩ	¼	C20060-104	BTS-100K	Br.-Blk.-Yl. AVC Network
56	68Ω	¼	C20060-680	BW-½-68	Blue-Gray-Blk. 1st IF Cathode
57	1000Ω	¼	C20060-102	BTS-1000	Br.-Blk.-Red 1st IF Decoupling
58	22KΩ	¼	C20060-223	BTS-22K	Red-Red-Or. Diode RF Filter
59	68Ω	¼	C20060-680	BW-½-68	Blue-Gray-Blk. 2nd IF Cathode
60	1000Ω	¼	C20060-102	BTS-1000	Br.-Blk.-Red 2nd IF Decoupling
61	6.8 Meg.	¼	C20060-685	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid Load
62	330KΩ	¼	C20060-334	BTS-330K	Or.-Or.-Yl. AF Plate Load
63	6800Ω	¼	C20120-682	BTS-6800	Blue-Gray-Red Ratio Detector Load
64	6800Ω	¼	C20120-682	BTS-6800	Blue-Gray-Red " " "
65	100Ω	¼	C20060-101	BW-½-100	Br.-Blk.-Br. Balancing Network
66	22KΩ	¼	C20060-223	BTS-22K	Red-Red-Or. De-emphasis
67	1 Meg.	¼	C20060-105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
68	220Ω	¼	C20060-221	BW-½-220	Red-Red-Br. Output Cathode
69	2.2 Meg.	¼	C20060-225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
70	100Ω	1	C20103-101	BW-1-100	Br.-Blk.-Br. Filter
71	22Ω	¼	C20060-220	BW-½-22	Red-Red-Blk. Surge Limiter
72	220Ω	1		BW-1-220	Red-Red-Br. FM Ant. Loading - See Note

Note-Not used in all models.

FILTER CHOKE

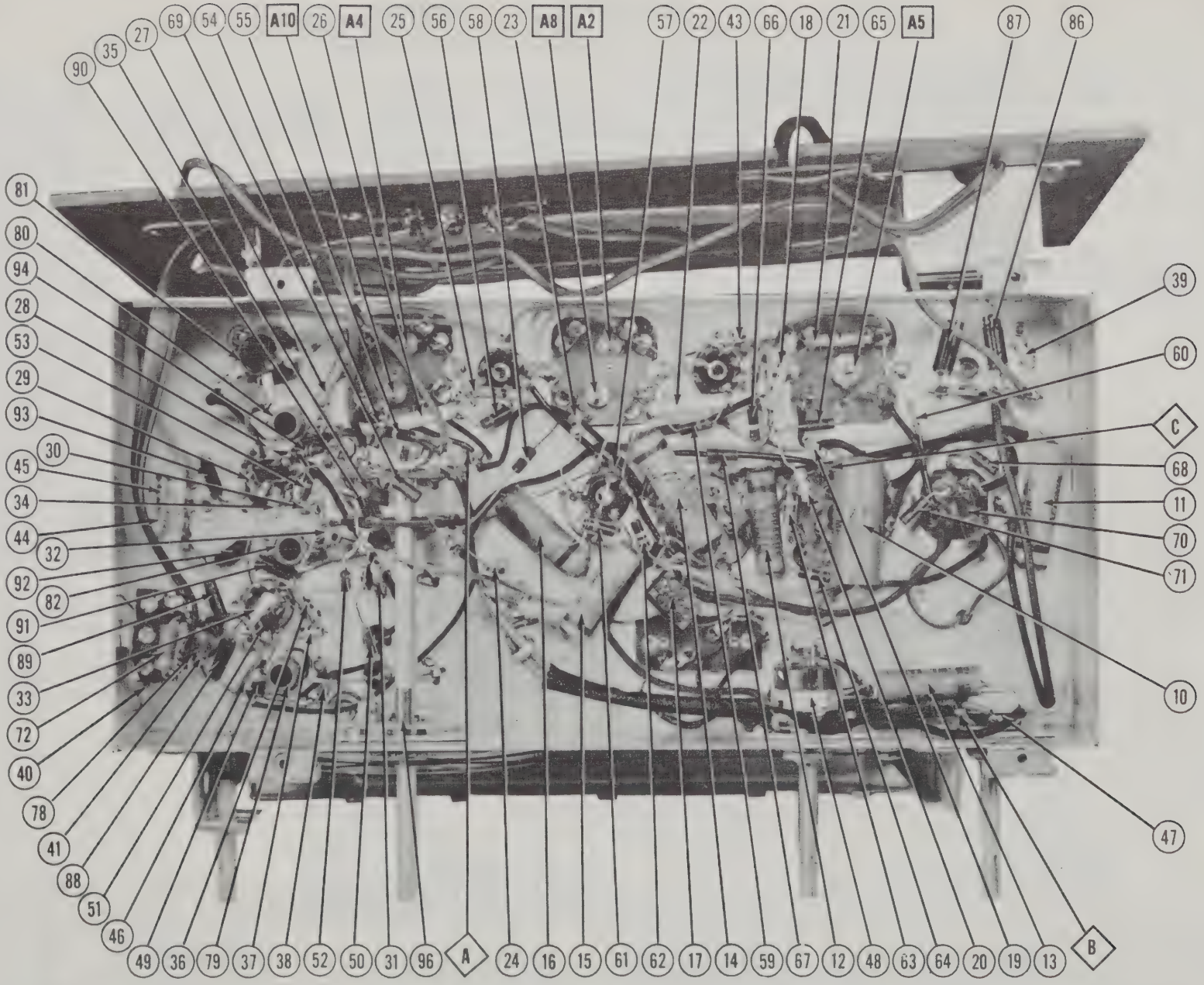
ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: ARVIN PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
73	.06A	220Ω	7 Henries	AC21394-1	C-1706	T20C52	C-2975	

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
74	2200Ω	3.4Ω	108Ω	.3Ω	AC21[illegible]-1	A-[illegible]	T-[illegible]	A-[illegible]	

ARVIN MODEL 1827FM
(Ch. #RE-237) PAGE 3

DATE 1/48 FOLDER #482-3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PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ARVIN PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-107†		†Use adaptor baffle
75	PM	3.4Ω	C21331	Mod. P5-V		
	CONE DIA.	VC DIA.				
76	5-1/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

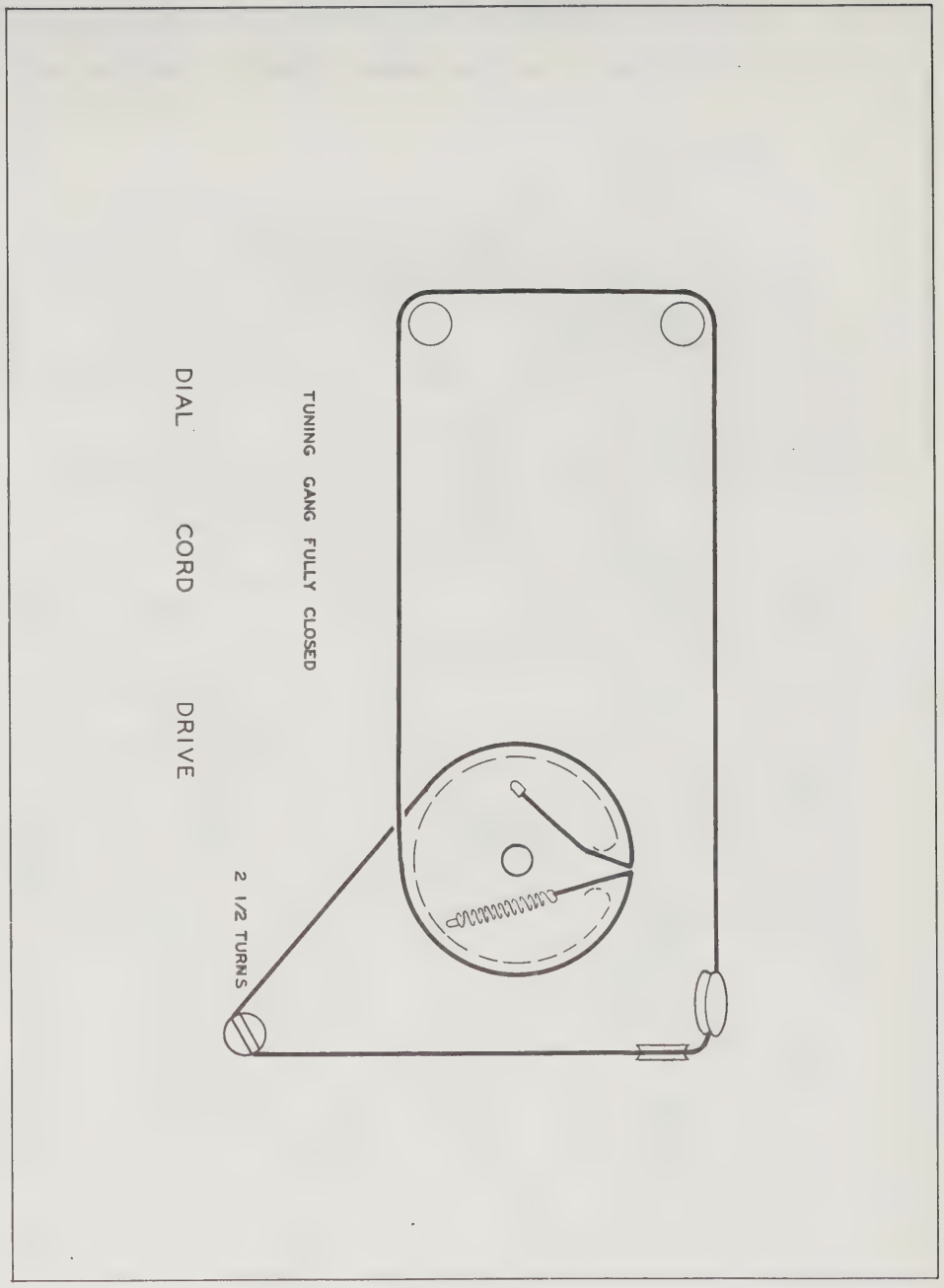
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ARVIN PART No.	MEISSNER PART No.	
77	Loop Ant.		1Ω	AE21395-1		
78	Ant. Coup. Trans.	.5Ω	.5Ω	AA21398-1		
79	1st FM RF Coil		0Ω	AC21399-1		
80	2nd FM RF Coil		0Ω	AC21400-1		
81	AM Osc.Coil	6Ω	1Ω	AC21396-1	14-1040	
82	FM " "		0Ω	AC21397-1		
83A	AM Input IF	16Ω	16Ω	AC21301-1		
B	FM Input IF	1.5Ω	1.5Ω			
84A	AM Output IF	16Ω	16Ω	AD21391-1		
B	FM Output IF	1Ω	1Ω			
85	Det. Trans.	1Ω	1Ω	AD21392-1		
86	RF Choke		.5Ω	AA21444-1		
87	" "		.5Ω	AA21444-1		
88	" "		2Ω	AA21445-1		
89	" "		2Ω	AA21445-1		
90	" "		2Ω	AA21445-1		
91	" "		2Ω	AA21445-1		
92	" "		2Ω	AA21445-1		
93	" "		2Ω	AA21445-1		
94	" "		0Ω			

DIAL LIGHT

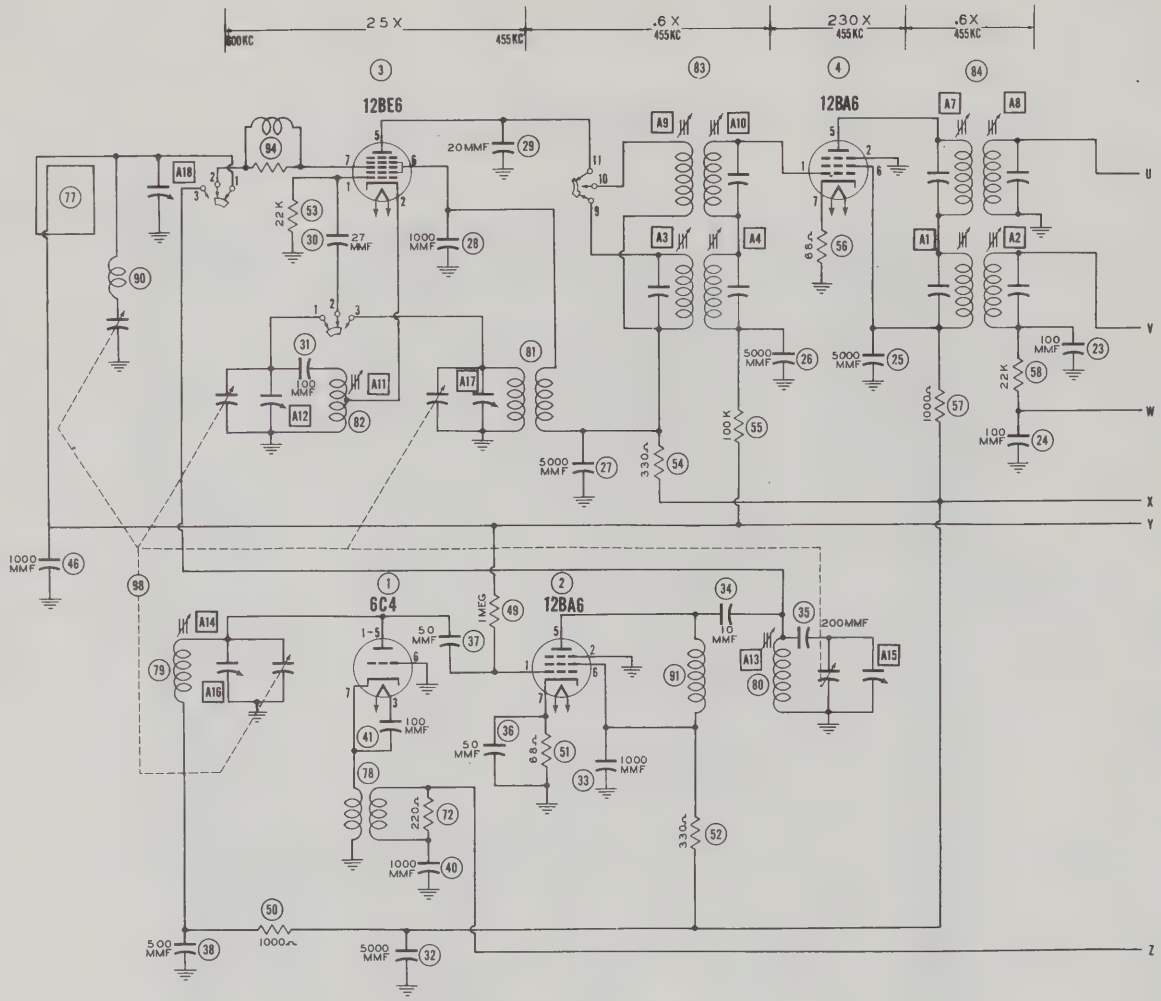
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ARVIN PART No.		INSTALLATION NOTES
95	Screw	115-125			A19135		Type C7

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
96	Switch	C21406	Band
97	Rectifier	A20207-3	Selenium
98	5 Gang Var. Cap.	AC21401-1	
A12	Trimmer	A21439	FM Osc. Adj.
	"	A21440	A15, A16
	Dial Scale	D21389	
	Dial Pointer Assy.	AC21377-1	
	Escutcheon	D21365	



DATE 1/48 SET #32 FOLDER #482-3



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6C4	90VDC	0V.	48VAC	42VAC	90VDC	0V.	0V.	-
‡	2	12BA6	0V.	0V.	42VAC	30VAC	92VDC	92VDC	1.1VDC	-
	3	12BE6	-7.3VDC§	0V.	48VAC	57VAC	100VDC	100VDC	-.2VDC	-
	4	12BA6	-.1VDC	0V.	57VAC	68VAC	92VDC	92VDC	.7VDC	-
‡	5	12BA6	0V.	0V.	30VAC	18VAC	87VDC	87VDC	1VDC	-
	6	6AL6	-.5VDC	0V.	0V	6.3VAC	-.6VDC	0V.	40VDC	-
‡	7	12H6	0V.	18VAC	-.1VDC	0V.	0V.	127VDC	6.3VAC	.1VDC
	8	50L6	0V.	68VAC	114VDC	103VDC	0V.	0V.	117VAC	0.2VDC

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION

§TAKEN WITH VACUUM TUBE VOLTMETER.

BANDSWITCH SHOWN IN BROADCAST POSITION.

IF=455KC
AM

IF=10.7MC
FM

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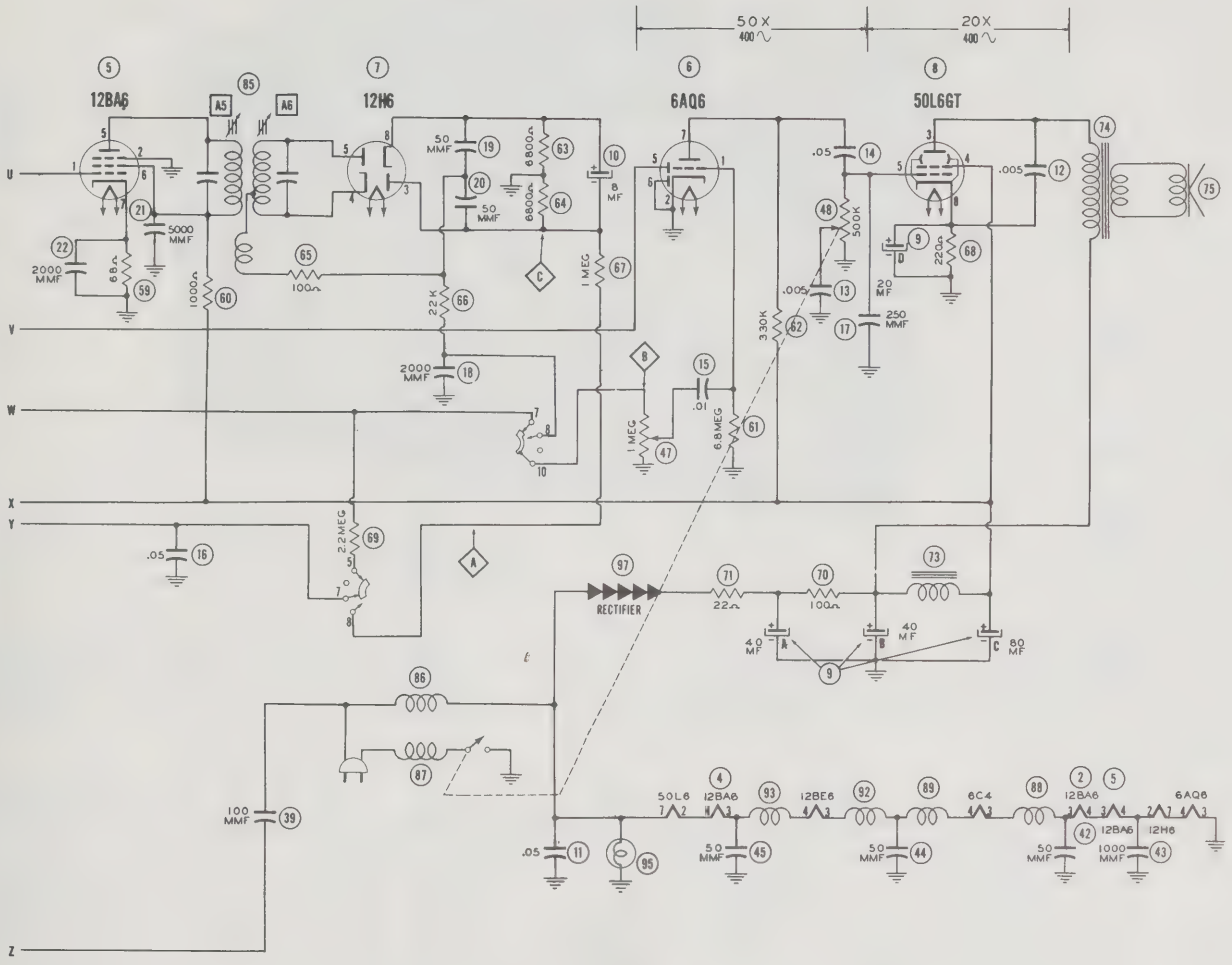
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6C4	30KΩ	INF.	40Ω	36Ω	30KΩ	0Ω	0Ω	-
‡	2	12BA6	2 Meg.	0Ω	35Ω	27Ω	30KΩ	30KΩ	70Ω	-
	3	12BE6	25KΩ	0Ω	41Ω	50Ω	30KΩ	30KΩ	3 Meg.	-
	4	12BA6	3 Meg.	0Ω	50Ω	58Ω	30KΩ	30KΩ	75Ω	-
‡	5	12BA6	.5Ω	0Ω	27Ω	18Ω	30KΩ	30KΩ	70Ω	-
	6	6AQ6	6.8 Meg.	0Ω	0Ω	6Ω	1 Meg.	0Ω	360KΩ	-
‡	7	12H6	0Ω	18Ω	7KΩ	1 Meg.	1 Meg.	30KΩ	6Ω	7KΩ
	8	50L6	0Ω	5Ω	30KΩ	30KΩ	440KΩ	925KΩ	80Ω	23Ω

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to Pin 7 (grid) 12BE6. Low side to chassis.	455KC	AM (left)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
2	Direct	High side to Pin 1 (grid) 12BA6 2nd IF Tube (5). Low side to chassis.	10.7MC (unmodulated)	FM (right)	Tuning cap. fully open.	DC probe to Point A. Common lead to chassis.	A5	Adjust for maximum deflection.
3	"	"	"	"	"	DC probe to Point B. Common lead to chassis.	A6	Use a zero center scale meter if available. Adjust for zero deflection.
4	"	High side to Pin 7 (grid) 12BE6. Low side to chassis.	"	"	"	DC probe to Point A. Common lead to chassis.	A7,A8, A9,A10	Adjust for maximum deflection.
5	220Ω carbon res.	High side to unbypassed FM ant. terminal. Low side to bypassed ant. terminal. Disconnect green lead to ant. terminal strip.	88MC	"	88MC	"	A11	Adjust for maximum deflection.
6	"	"	108MC	"	108MC	"	A12	Adjust for maximum deflection. Repeat Steps 5 & 6 until no further improvement can be made.
7	"	"	91MC	"	Tune for maximum deflection.	"	A13, A14	Adjust for maximum deflection.
8	"	"	105MC	"	"	"	A15, A16	Adjust for maximum deflection. Repeat Steps 7 & 8 until no further improvement can be made. Continue with Step 9.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

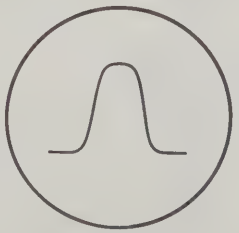
In Steps 2 & 3 disconnect parasitic suppressor (coil wound on resistor - Item 94) from Pin 7 of 12BE6. Solder a 100KΩ resistor from Pin 7 of 12BE6 to chassis keeping leads as short as possible.

Signal should be freq. modulated 450KC sweep with 60∿modulation. Use 120∿ sawtooth voltage in scope for horizontal deflection.

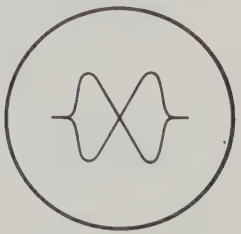
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
2	.05 MFD	See scope prealignment notes. High side to Pin 7 (grid) 12BE6. Low side to chassis.	10.7MC (freq. mod.)	FM (right)	Tuning cap. fully open.	Vertical input to Point C. Ground to chassis.	A5,A8, A7,A10, A9.	Disconnect 8 MFD cap. from Point C. Adjust for maximum height, symmetry and coincidence per Pattern A.
3	"	"	"	"	"	Vertical input to Point B. Ground to chassis.	A6	Reconnect 8 MFD cap. to Point C. Adjust for maximum straightness of crossover lines with crossover occurring at center of Pattern B. Reconnect coil (94) to pin 7 & disconnect 100KΩ resistor.
4	220Ω carbon res.	Disconnect green lead from ant. terminal strip. High side to unbypassed terminal of ant. terminal strip. Low side to bypassed terminal.	88MC	"	88MC	Vertical input to Point C. Ground to chassis.	A11	Disconnect 8 MFD cap. from Point C. Adjust A11 for coincidence of Pattern A.
5	"	"	108MC	"	108MC	"	A12	Adjust for coincidence of Pattern A. Repeat Steps 4 & 5 until no further improvement can be made.
6	"	"	91MC	"	Tune for coincidence.	"	A13, A14	Adjust for maximum amplitude of Pattern A.
7	"	"	105MC	"	"	"	A15, A16	Adjust for maximum amplitude of Pattern A. Repeat Steps 6 & 7 until no further improvement can be made. Reconnect 8 MFD cap. to Point C and continue with Step 9.

AM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
9		Loop	1620KC	AM (left)	Tuning cap. fully open.	Across voice coil	A17	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum ouptut.
10		"	1400KC	"	Tune for maximum output.	"	A18	Adjust for maximum output. Check tracking at 1000KC and 600KC.

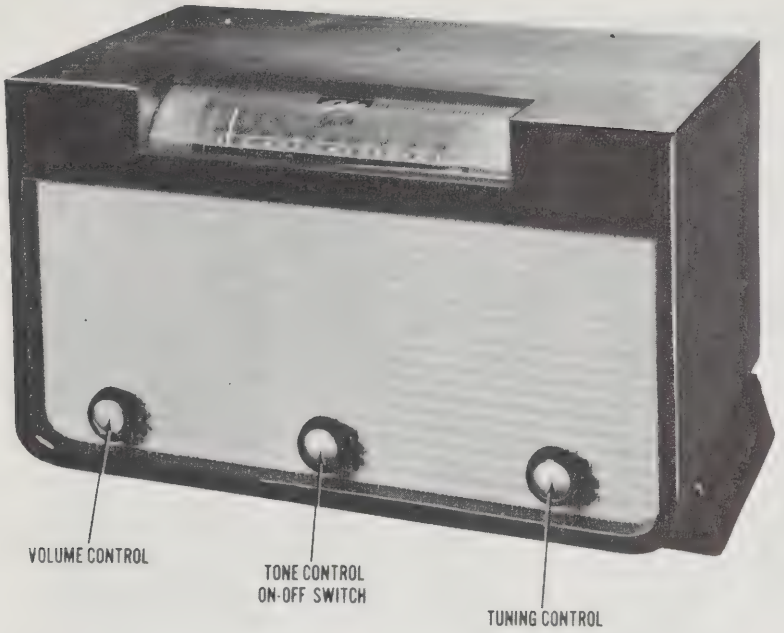


PATTERN A



PATTERN B

DELCO MODEL
R-1243



DELCO MODEL R-1243

TRADE NAME	Delco, Model R-1243
SUPPLIER	United Motors Service, Div. of G.M.C., General Motors Bldg., Detroit 2, Mich.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 6SA7 Converter, (2) 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	535-1620KC RATING .47 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

This receiver employs two different tuning assemblies. Some models have tuning unit 50B199 which has an oscillator padding coil with a slug adjustment. Others have tuning unit 50B225 without the oscillator padding coil. Before attempting alignment determine which tuning unit is used and follow correct procedure.

To set pointer turn tuning slugs fully in and set pointer to index mark at left end of dial backplate.

RMA dummy ant. consists of 200MMFD cap. in series with 20 microhenry choke, with choke shunted by 400MMFD in series with 400Ω carbon resistor.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
			ALIGNMENT FOR MODELS WITH TUNING UNIT 50B225				
1	RMA Dummy	High side to "A" terminal of ant. terminal strip. Low side to "G" terminal.	455KC	Tuning slugs fully out.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	"	"	1625KC	"	"	A5,A6	" " " "
3	"	"	1400KC	Tune for maximum output.	"	Ant.Coil (53)	Adjust position of ant. coil for maximum output. Repeat Steps 2 & 3 until no further improvement can be made.
			ALIGNMENT FOR MODELS WITH TUNING UNIT 50B199				
1	RMA Dummy	High side to "A" terminal of ant. terminal strip. Low side to "G" terminal.	455KC	Tuning slugs fully out.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2	"	"	1660KC	"	"	A5, A6	" " " "
3	"	"	1400KC	Tune for maximum output.	"	Ant. Coil (53)	Adjust position of ant. coil for maximum output.
4	"	"	600KC	"	"	A7	Rock tuning control and adjust for maximum output. Repeat Steps 2, 3 & 4 until no further improvement can be made.

HOWARD W. SAMS & CO., INC. **Indianapolis 6, Indiana**

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DATE 1/48 SET #32 FOLDER #482-4

PARTS LIST AND DESCRIPTIONS

DELCO MODEL R-1243

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DELCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6SA7	6SA7	8R	
2	1st IF Amp.	6SK7	6SK7	8N	
3	2nd IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DELCO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	60	450	1217457	DY-4x20-450*	EL-420*	AF4444J*	UP222245*		▲ Filter
B	20	450							■ "
C	20	400		M-20-450	UT-20	PRS450-20	BR2045		▲ "
8	.01	600	E103	S-6-01	TC-11	684-01	DT6S1		Audio Coupling
9	.005	600	E502	S-6-005	TC-25	684-005	DT6D5		Tone Comp.
10	.01	600	E103	S-6-01	TC-11	684-01	DT6S1		Audio Coupling
11	.01	600	E103	S-6-01	TC-11	684-01	DT6S1		Tone Comp.
12	.01	600	E103	S-6-01	TC-11	684-01	DT6S1		2nd IF Screen Bypass
13	.01	600	E103	S-6-01	TC-11	684-01	DT6S1		2nd IF Screen Decoupling
14	.01	600	E103	S-6-01	TC-11	684-01	DT6S1		AVC Filter
15	.01	600	E103	S-6-01	TC-11	684-01	DT6S1		1st IF Screen Bypass
16	.01	600	E103	S-6-01	TC-11	684-01	DT6S1		IF Bypass Pwr. Supply
17	.01	600	E103	S-6-01	TC-11	684-01	DT6S1		Conv. Screen Bypass
18	.02	400		S-4-02	TC-12	484-02	DT4S2		Ant. Coupling #
19	.01	600	E103	S-6-01	TC-11	684-01	DT6S1		Audio Coupling
20	2000	500	G202	MW.5-22	1FM-22	1467-002	1W5D2		Output Plate Bypass
21	100	500	G101	MO.5-31	1FM-31	1468-0001	5W5T1		AF Plate Bypass
22	100	500	G101	MO.5-31	1FM-31	1468-0001	5W5T1		IF Coupling
23	680	500	G681						Fixed Pad
24	180								Fixed Trimmer
25	50		G101	MO.5-45	1FM-45	1468-00005	5W5Q5		Osc. Grid Cap.
26	75								Fixed Trimmer
27	1000		G102	MWS.5-21	MS-21	1464-001	2R5D1		Fixed Pad.

*Parallel sections to obtain desired capacity.
#Some models may use 100MMFD in this application.

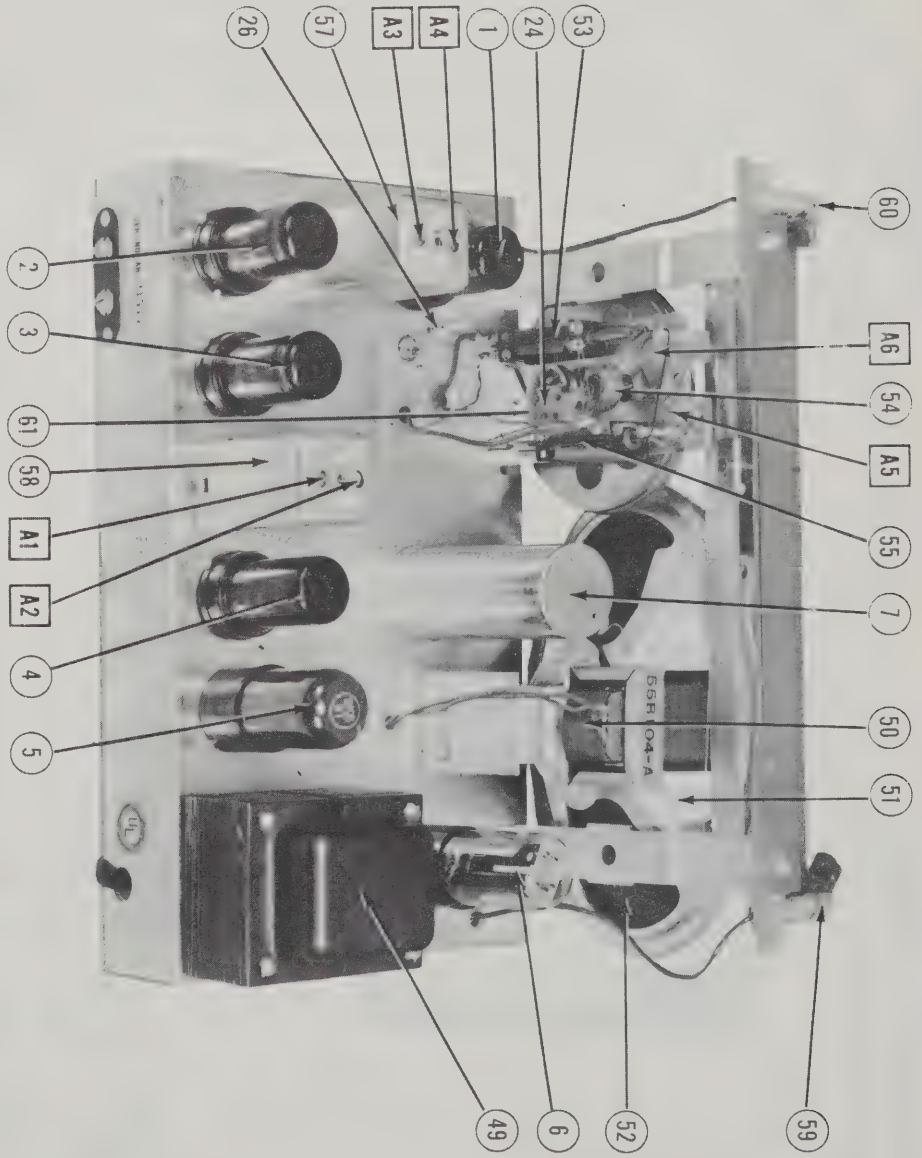
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
28A	2 Meg.	½	1217448		AT-126	Volume Control tapped @ 200K
B	Shaft		Not Req.		KSS-3	Attach to 28A per instr.
29A	500KΩ	½	1217446	D13-133	AM-60-Z	Tone Control & Sw.
B	Shaft		Not Req.	E	KSS-3	Attach to 29A per instr.
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	IDENTIFICATION CODES
30	10KΩ	½	A103	BTS-10K	Br.-Blk.-Or. Antenna Loading
31	470KΩ	½	A474	BTS-470K	Yl.-Vi.-Yl. AVC Network
32	22KΩ	½	A223	BTS-22K	Red-Red-Or. Oscillator Grid
33	22KΩ	2	C223	BT-2-22K	Red-Red-Or. Converter Screen Dropping
34	1 Meg.	½	A105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
35	68KΩ	½	A683	BTS-68K	Blue-Gray-Or. 1st IF Screen Dropping
36	4700Ω	½	A472	BTS-4700	Yl.-Vi.-Red 1st IF Plate Load
37	100KΩ	½	A104	BTS-100K	Br.-Blk.-Yl. 2nd IF Grid
38	1000Ω	½	A102	BTS-1000	Br.-Blk.-Red 2nd IF Decoupling
39	68KΩ	½	A683	BTS-68K	Blue-Gray-Or. 2nd IF Screen Dropping
40	220Ω	½	A221	BW-½-220	Red-Red-Br. 2nd IF Cathode
41	470KΩ	½	A474	BTS-470K	Yl.-Vi.-Yl. Diode Load
42	22KΩ	½	A223	BTS-22K	Red-Red-Or. Tone Compensation
43	6.8 Meg.	½	A685	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES*
	RESISTANCE	WATTS	DELCO PART No.	IRC PART No.	
44	470KΩ	½	A474	BTS-470K	Y1.-V1.-Y1. AF Plate Load
45	6800Ω	½	B681	BT-2-6800	Blue-Gray-Br. Output Cathode
46	4700Ω	½	A472	BTS-4700	Y1.-V1.-Red Decoupling
47	6800Ω	2	C682	BT-2-6800	Blue-Gray-Red Filter
48	6800Ω	2	C682	BT-2-6800	Blue-Gray-Red "

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	DELCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
49	117V AC @ .47A	580V CT @ .064A	5.0V AC @ 2.0A	6.5V AC @ 2.0A	1217459	P-6011†	T22R02	P-2551†

†Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DELCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
50	5300Ω	3.2Ω	430Ω	.4Ω	1217504	A-3877	T22S46	A-2530	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			DELCO PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
51	PM	3.2Ω	1217458			
	CONE DIA.	VC DIA.				
52	4-7/8" x 7"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	DELCO PART No.	MEISSNER PART No.	
53A	Ant. Coil	8.5Ω				Tapped at .5Ω used only on tuners stamped 50B225.
B	" "					Tapped at .5Ω used only on tuners stamped 50B199.
54	Ant. Shunt Coil	1.8Ω				Tapped at .8Ω used only on tuners stamped 50B225.
55A	Osc. Coil	4Ω				Used only on tuners stamped 50B225.
B	" "					" " " " " 50B199.
56	Osc. Shunt Coil					Used only on tuners stamped 50B199.
57	Input IF	12.5Ω	12.5Ω		16-6658	
58	Output IF	12.5Ω			16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					DELCO PART No.	MERIT PART No.	
59	Bayonet	6-8	0.25A	Blue	44		Type 44
60	"	"	"	"	"		"

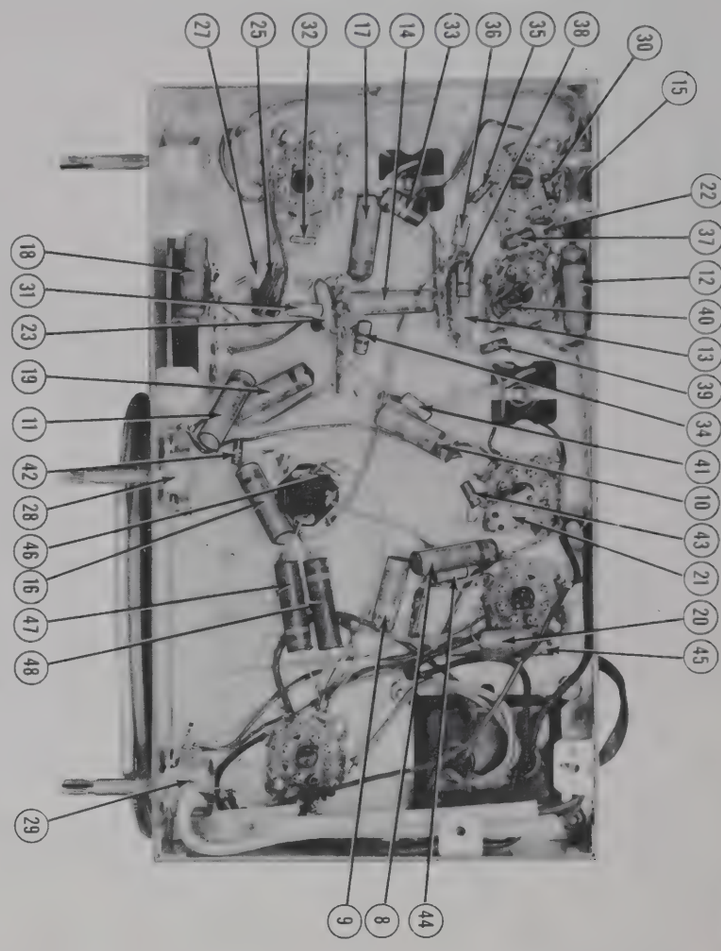
MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
61A	Tuning Assby.	1217451	
B	"	1217509	with calibrated glass dial
	Dial Pointer	1217442	
	Dial	1217452	Glass (For Tuner 50B199)
	"	1217449	" (For Tuner 50B225)
	Knob	1217455	Tone, Tuning, Volume

DELCO MODEL R-1243

DATE 1/48 SET #32 FOLDER #482-4

CHASSIS—BOTTOM VIEW



DELCO MODEL R-1243

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0V.	0V.	210VDC	80VDC	-5.5VDC§	0V.	6.5VAC	0V.
2	6SK7	0V.	0V.	0V.	-.7VDC	0V.	65VDC	6.5VAC	175VDC
3	6SK7	0V.	0V.	0V.	0V.	24VDC	80VDC	6.5VAC	200VDC
4	6SQ7	0V.	-.7VDC	0V.	-.5VDC	-.5VDC	90VDC	6.5VAC	0V.
5	6K6	0V.	0V.	280VDC	270VDC	0V.	0V.	6.5VAC	215VDC
6	5Y3	0V.	295VDC	0V.	290VAC	0V.	290VAC	0V.	295VDC

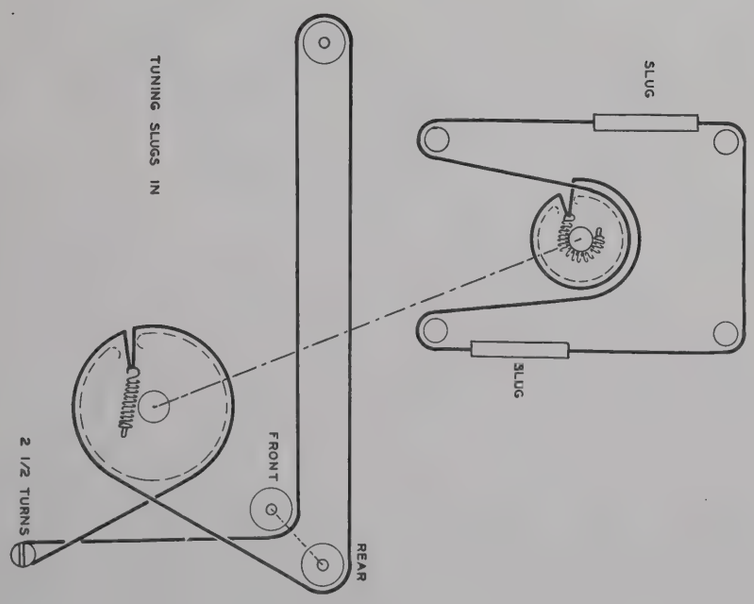
§TAKEN WITH VACUUM TUBE VOLTMETER.

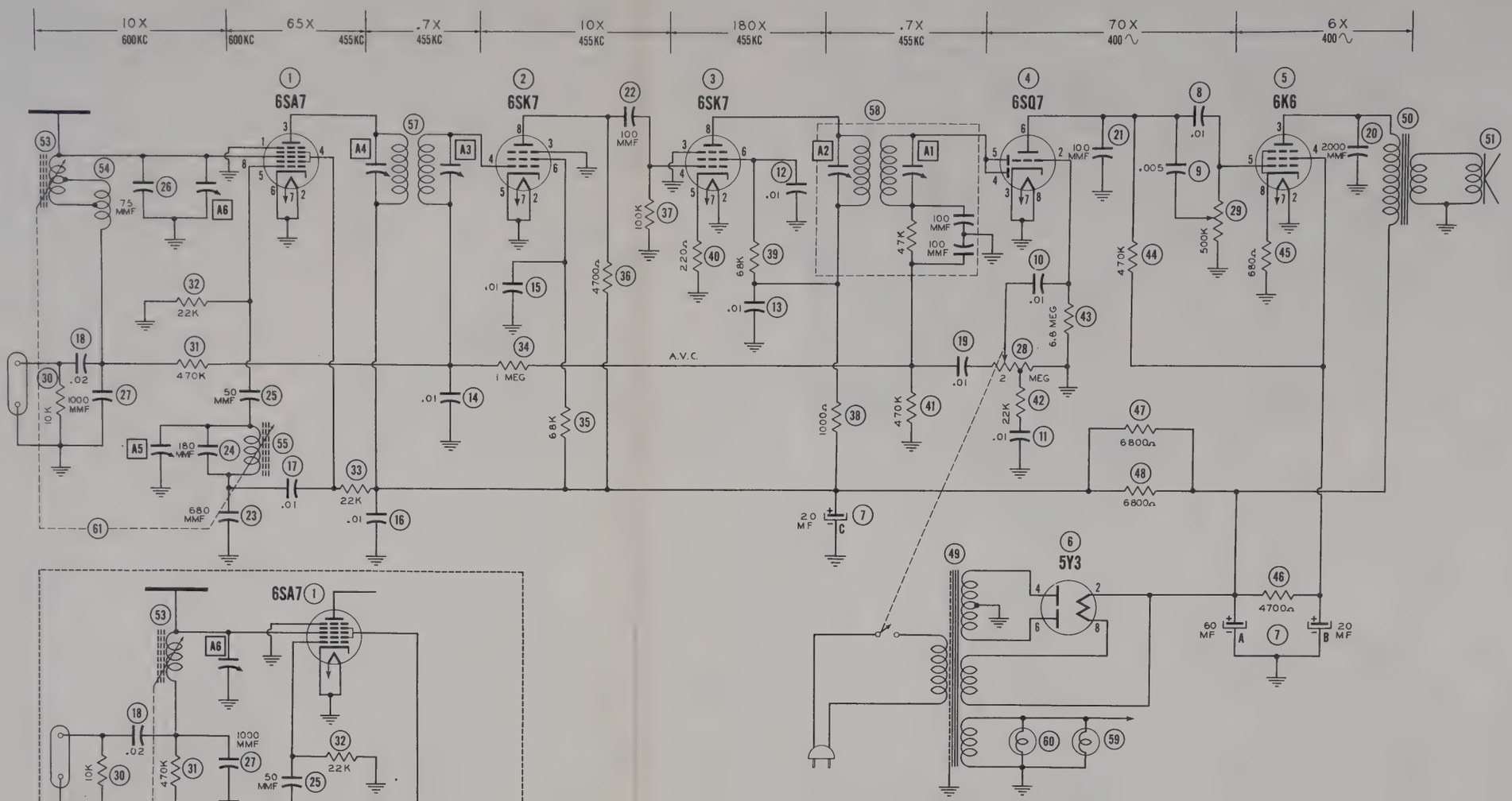
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0Ω	0Ω	50KΩ	72KΩ	20KΩ	0Ω	.1Ω	2 Meg.
2	6SK7	0Ω	0Ω	0Ω	1.5 Meg.	0Ω	120KΩ	.1Ω	55KΩ
3	6SK7	0Ω	0Ω	0Ω	100KΩ	220Ω	120KΩ	.1Ω	50KΩ
4	6SQ7	0Ω	7 Meg.	0Ω	500KΩ	500KΩ	550KΩ	.1Ω	0Ω
5	6K6	0Ω	0Ω	50KΩ	55KΩ	500KΩ	INF.	.1Ω	650Ω
6	5Y3	INF.	50KΩ	INF.	170Ω	INF.	160Ω	0Ω	50KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.





A PHOTOFACT STANDARD NOTATION SCHEMATIC

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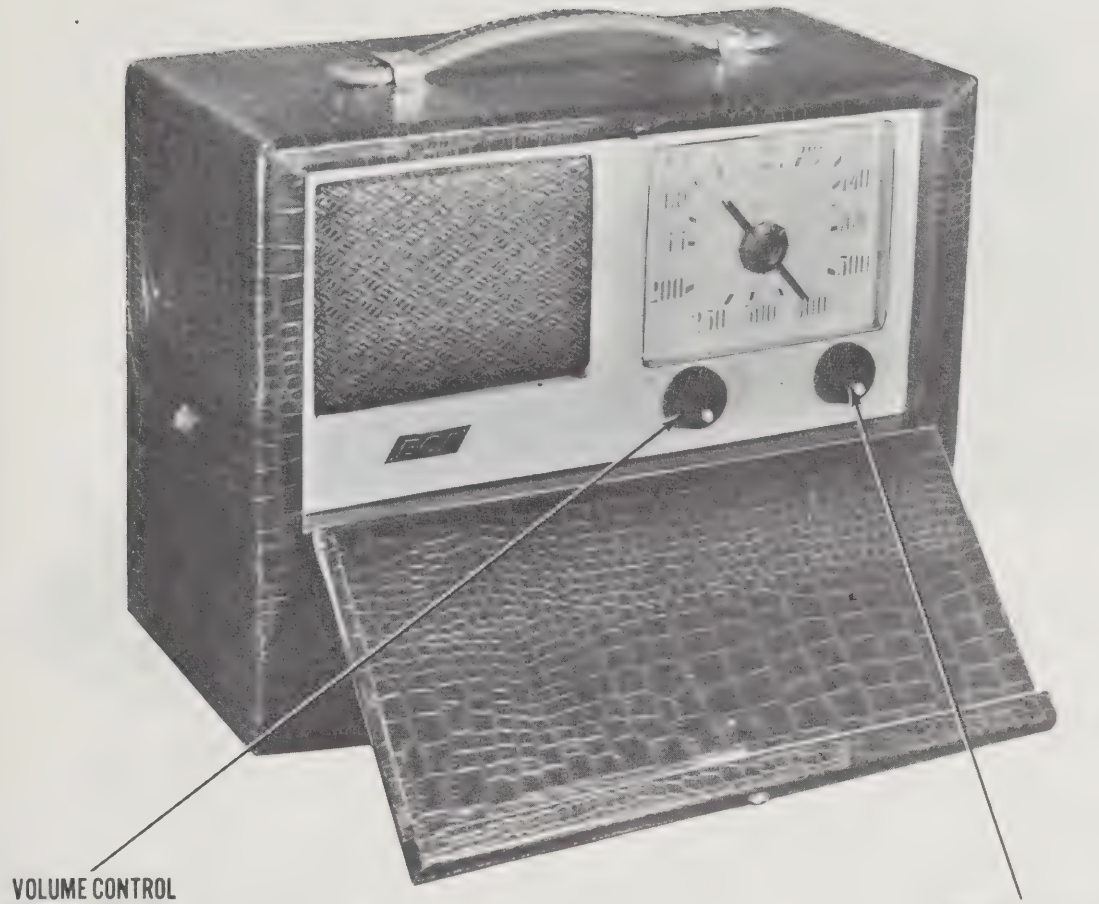
482-4

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

PHOTOFACT* Folder
*TRADE MARK

ECA MODEL 204
BATTERY-LINE OPERATED

ECA MODEL 204
BATTERY-LINE OPERATED



ECA MODEL 204
BATTERY-LINE OPERATED

ECA MODEL 204

TRADE NAME	ECA, Model 204
MANUFACTURER	Electronic Corp. of America, 170 53rd St., Brooklyn, N.Y.
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (SEVEN)	Types, 1T4 RF Amp., 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-125 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply
RATING	.23 Amp. @ 117 Volts AC or 67MA @ 9 Volts DC and 17MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Volume control should be at maximum position output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to front stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2		Loop	1500KC	1500KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6,A7	Adjust for maximum output.

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Printed in U. S. of America
DATE 1/48 SET #32 FOLDER #482-5

PARTS LIST AND DESCRIPTIONS

ECA MODEL 204
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ECA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1T4	1T4	6AR	
2	Converter	1R5	1R5	7AT	
3	IF Amp.	1T4	1T4	6AR	
4	Det.-AVC-AF	1S5	1S5	6AU	
5	Power Output	3Q4	3Q4	7BA	
6	" "	50B5	50B5	7BZ	
7	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ECA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	40	150		DY-419	EL-340	AF101010D4A	UP7DJ63	◓ Filter
B	40	150						■ "
C	40	150						▲ "
D	100	25		M-100-25	UHC-102	PRS25-100		Cathode Bypass
9	.05	200		MPH-4-05	TC-15	484-05	DT4S5	Line Filter
10	.01	400		S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
11	.005	600		S-6-005	TC-25	684-005	DT6D5	Audio Coupling
12	.05	200		S-4-05	TC-15	484-05	DT4S5	AF Screen Bypass
13	.005	600		S-6-005	TC-25	684-005	DT6D5	Audio Coupling
14	.05	200		S-4-05	TC-15	484-05	DT4S5	Filament Bypass
15	.2	200		S-2-2	TC-2	484-.2	DT4P2	" "
16	.02	400		S-4-02	TC-12	484-02	DT4S2	Screen Bypass
17	.05	400		S-4-05	TC-15	484-05	DT4S5	AVC Filter
18	.02	400		S-4-02	TC-12	484-02	DT4S2	RF Bypass Power Supply
19	100			MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
20	100			MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
21	100			MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Cap.
22	500			MO.5-35	1FM-35	1468-0005	5W5T5	RF Coupling

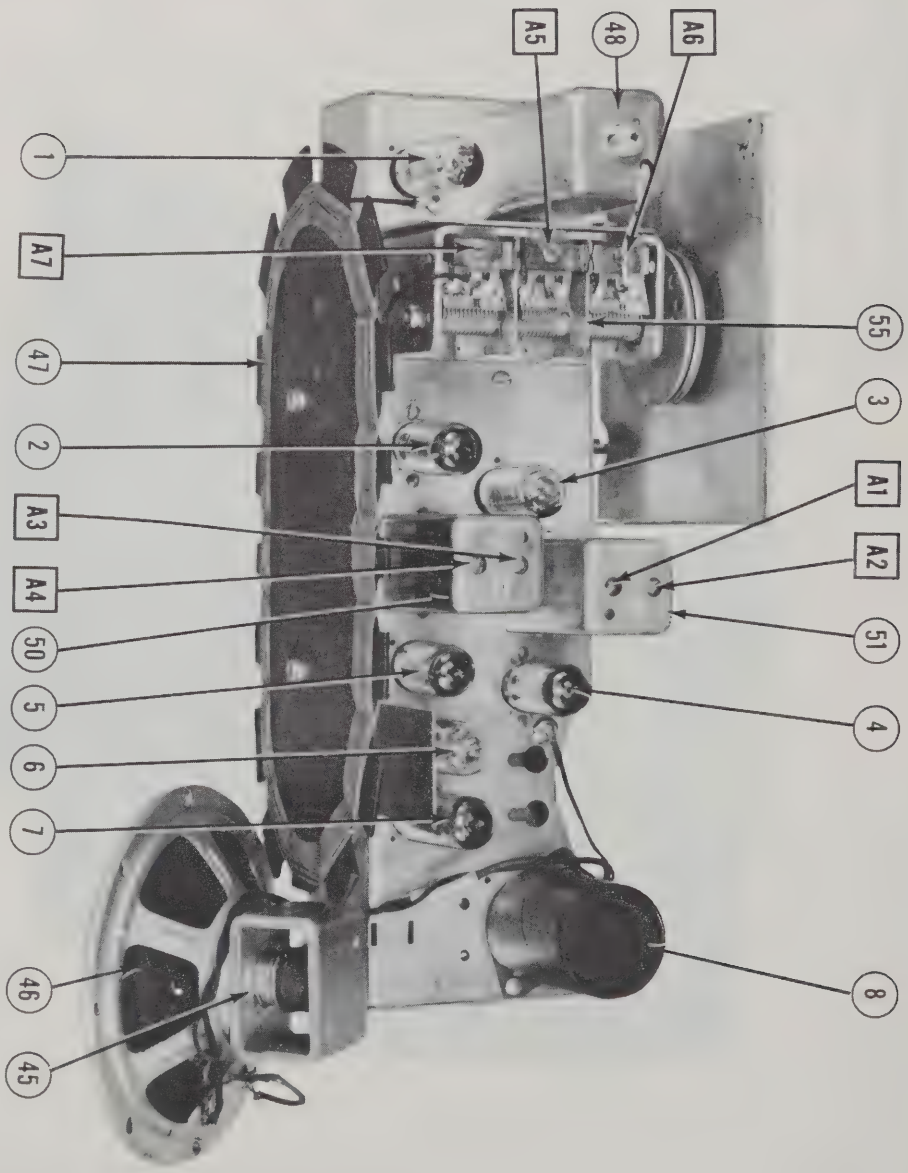
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ECA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	1 Meg.	½		D13-137	M-63-Z	Volume Control
B	Shaft			A	Not Req.	Attach to 23A per instructions
C	Switch			42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ECA PART No.	IRC PART No.	IDENTIFICATION CODES
24	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. RF Grid
25	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
26	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
27	2200Ω	½		BTS-2200	Red-Red-Red Decoupling
28	15KΩ	½		BTS-15K	Br.-Grn.-Or. "
29	1000Ω	½		BTS-1000Ω	BR-Blk.-Red Filament String
30	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode RF Filter
31	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
32	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
33	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
34	1.8 Meg.	½		BTS-1.8 Meg.	Br.-Blue-Grn. Output Grid
35	470Ω	½		BTS-470	Yl.-Vi.-Br. Bias
36	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
37	5000Ω	½		BTS-4700	Grn.-Blk.-Red Filament String
38	1000Ω	½		BTS-1000	Br.-Blk.-Red Filter
39	18KΩ	1		BTA-18K	Br.-Gray-Or. Filament String
40	15Ω	½		BW-½-15	Br.-Grn.-Blk. Surge Limiter
41	270Ω	½		BW-½-270	Red-Vi.-Br. Filter
42	200Ω	5		AB-200	Line Dropping
43	33Ω	½		Bw-½-33	Or.-Or.-Blk. Output Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ECA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
44	6200Ω tapped @ 1900Ω	3.5Ω	460Ω tapped @ 190Ω	.5Ω					

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ECA PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107		
45	PM	3.5Ω		Mod. P5-V		
	CONE DIA.	VC DIA.				
46	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

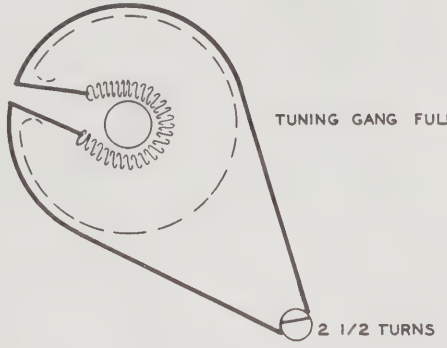
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ECA PART No.	MEISSNER PART No.	
47	Loop Ant.		1.2Ω			
48	RF Coil	105Ω	4.1Ω			
49	Osc. Coil	6.5Ω	1.8Ω		14-1040	
50	Input IF	16Ω	15Ω		16-6658	
51	Output IF	14.5Ω	14.1Ω		16-6660	

BATTERIES

ITEM No.	VOLTAGE	ECA PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
52	9V "A"		#746			2 Used in series
53	90V "B"			#482		" " " "

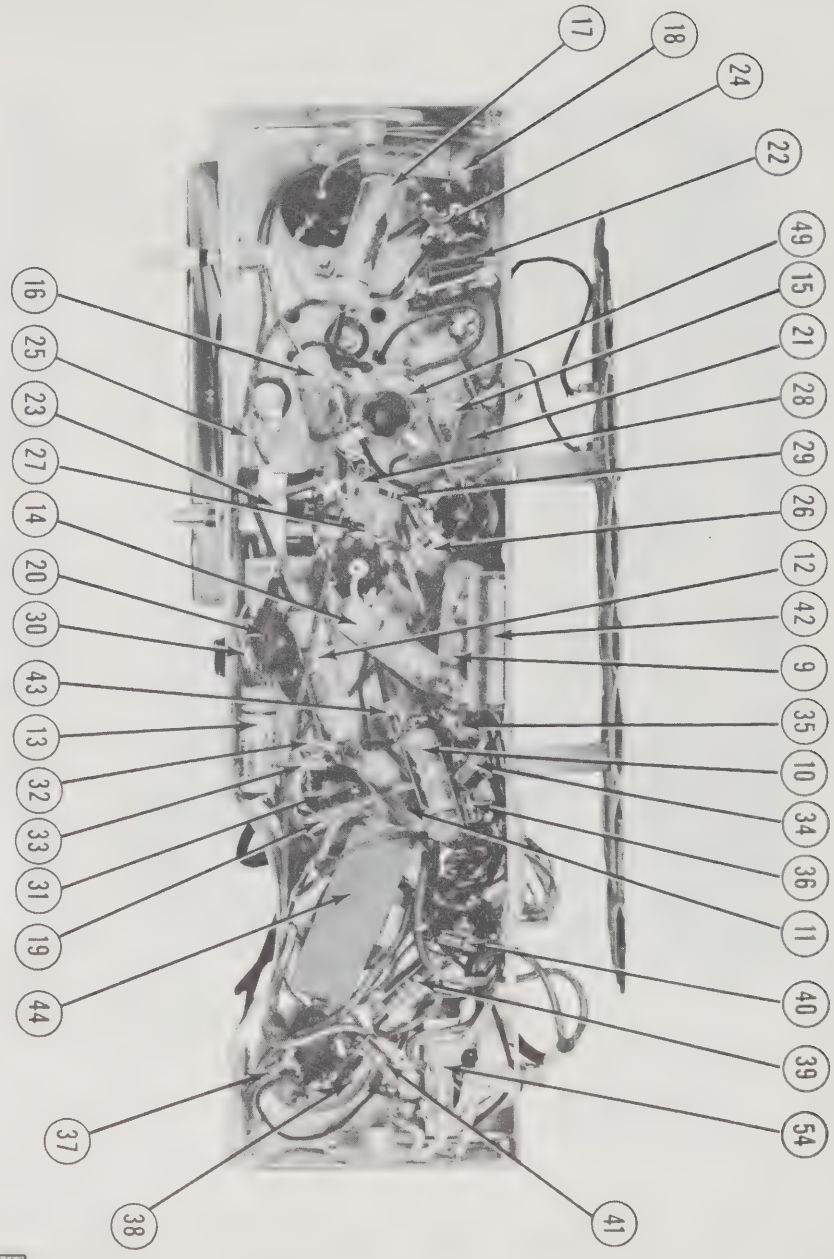
MISCELLANEOUS

ITEM No.	PART NAME	ECA PART No.	NOTES
54	Switch		AC-DC-Batt.
55	3 Gang Var. Cap.		(35-470MMF, 35-200MMF, 35-470 MMF)

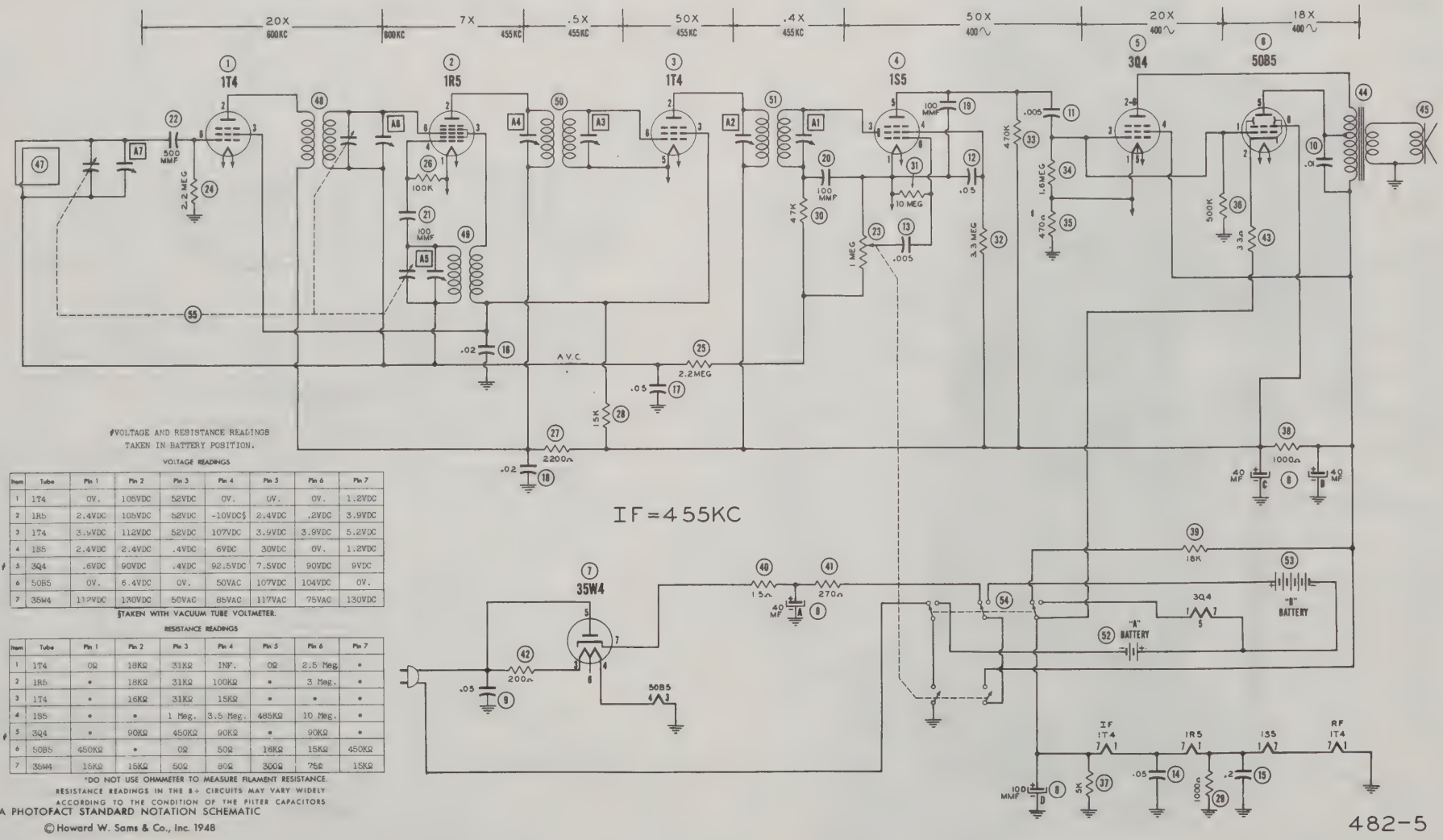


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



ECA MODEL 204
BATTERY-LINE OPERATED



#VOLTAGE AND RESISTANCE READINGS TAKEN IN BATTERY POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1T4	0V.	105VDC	52VDC	0V.	0V.	0V.	1.2VDC
2	1R5	2.4VDC	105VDC	52VDC	-10VDC§	2.4VDC	.2VDC	3.9VDC
3	1T4	3.9VDC	112VDC	52VDC	107VDC	3.9VDC	3.9VDC	5.2VDC
4	1S5	2.4VDC	2.4VDC	.4VDC	6VDC	30VDC	0V.	1.2VDC
# 5	3Q4	.6VDC	90VDC	.4VDC	92.5VDC	7.5VDC	90VDC	9VDC
6	50B5	0V.	6.4VDC	0V.	50VAC	107VDC	104VDC	0V.
7	35W4	112VDC	130VDC	50VAC	85VAC	117VAC	75VAC	130VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1T4	0Ω	18KΩ	31KΩ	INF.	0Ω	2.5 Meg.	*
2	1R5	*	18KΩ	31KΩ	100KΩ	*	3 Meg.	*
3	1T4	*	16KΩ	31KΩ	15KΩ	*	*	*
4	1S5	*	*	1 Meg.	3.5 Meg.	485KΩ	10 Meg.	*
# 5	3Q4	*	90KΩ	450KΩ	90KΩ	*	90KΩ	*
6	50B5	450KΩ	*	0Ω	50Ω	16KΩ	15KΩ	450KΩ
7	35W4	15KΩ	15KΩ	50Ω	80Ω	300Ω	75Ω	15KΩ

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE. RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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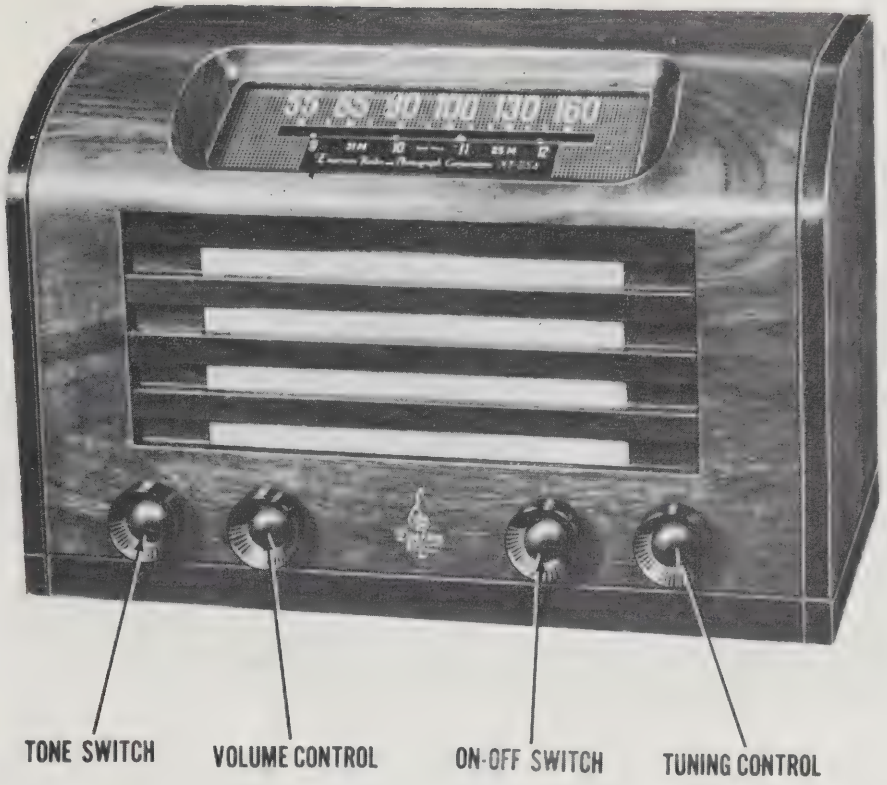
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to Pin #1 of 1S5.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

EMERSON MODEL 530
(Ch. 120006, Ch. 120056)



EMERSON MODEL 530
(Ch. 120006, Ch. 120056)

EMERSON MODEL 530 (Ch. 120056)

TRADE NAME	Emerson, Model 530 (Ch. 120006, Ch. 120056)
MANUFACTURER	Emerson Radio & Phonograph Corp., 111 Eighth Ave. New York 11, N.Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Ant.
TUBES (SIX)	Types, 7B7 or 6SS7 RF Amp., 14Q7 or 12SA7 Converter, 7B7 or 6SS7 IF Amp., 14B6 or 12SQ7 Det.-AVC-AF, 50A5 or 50L6 Power Output, 35Y4 or 35Z5 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .25 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer 1-11/16" from left edge of dial backplate.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to Pin 6 (grid) 14Q7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	.1 MFD	High side to ext. ant. lead. Low side to chassis.	"	"	"	A5	Adjust for minimum output.
3		Loop	1400KC	5½" from left edge of dial backplate.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	"	Tune for maximum output.	"	A7	Adjust for maximum output.
5		"	600KC	"	"	Loop	This Step is only necessary if the loop has been replaced. Adjust the free half turn of the loop to either side of the center of the loop to give maximum output. Then repeat Step 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

EMERSON MODEL 530

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	RF Amp.	7B7	7B7	8V	
B	" "	6SS7	6SS7	8N	
2A	Converter	14Q7	14Q7	8AL	
B	"	12SA7	12SA7	8R	
3A	IF Amp.	7B7	7B7	8V	
B	" "	6SS7	6SS7	8N	
4A	Det.-AVC-AF	14B6	14B6	8W	
B	" " "	12SQ7	12SQ7	8Q	
5A	Power Output	50A5	50A5	6AA	
B	" "	50L6	50L6	7AC	
6A	Rectifier	35Y4	35Y4	5AL	
B	"	35Z5	35Z5	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	50	150	925011	M-2x50-150	TA-505	PRSA150-50-50	EZ5515	Filter
B	50	150						"
7A	50	150	925110	DSR-5030-150	TA-530	PRSA150-40-40	BRD3515	" †
B	30	150						" †
8	.05	400	920030	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
9	.2	200	920050	S-4-2	TC-2	484-.2	DT4P2	Line Isolation
10	.02	400	920020	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
11	.02	400	920020	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
12	.002	600	920010	S-6-002	TC-22	684-002	DT6D2	Tone Compensation
13	.002	600	920010	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
14	.05	200	920060	S-4-05	TC-15	484-05	DT4S5	AVC Filter
15	.05	400	920020	S-4-05	TC-15	484-05	DT4S5	RF Bypass Pwr. Supp.
16	.05	200	920060	S-4-05	TC-15	484-05	DT4S5	RF Screen Bypass
17	220	500	910000	MO.5-32	1FM-32	1468-0002	5W5T2	Audio Plate Bypass
18	110	500	920010	MO.5-311	1FM-31	1468-0001	5W5T1	Diode Filter
19	110	500	920010	MO.5-311	1FM-31	1468-0001	5W5T1	RF Coupling
20	220	500	910000	MO.5-32	1FM-32	1468-0002	5W5T2	Osc. Grid
49	.002	600	920010	S-6-002	TC-22	684-002	DT6D2	Ext. Ant. Coupling

†Used in chassis 120006.

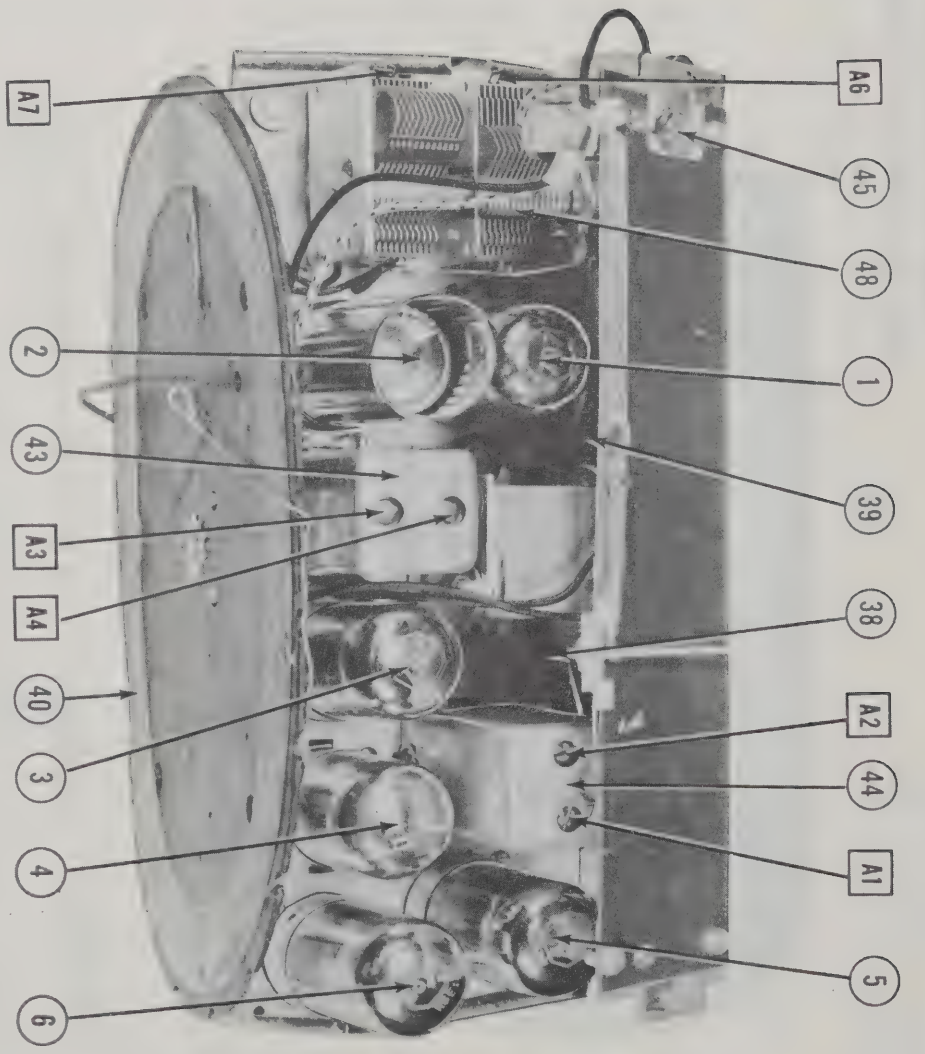
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	½	390180	D13-133	AM-60-2	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 21A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
22	10KΩ	¼	310730	BTS-10K	Br.-Blk.-Or. RF Plate Load
23	39KΩ	¼	310870	BTS-39K	Or.-White-Or. RF Screen Dropping
24	22KΩ	¼	310810	BTS-22K	Red-Red-Or. Converter Grid
25	470KΩ	¼	321130	BTS-470K	Yl.-Vi.-Yl. RF Grid
26	22KΩ	¼	310810	BTS-22K	Red-Red-Or. Oscillator Grid
27	15 Meg.	¼	397000	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
28	3.3 Meg.	¼	321330	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
29	15 Meg.	¼	397000	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
30	470KΩ	¼	321130	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
31	470KΩ	¼	321130	BTS-470K	Yl.-Vi.-Yl. Output Grid
32	150Ω	½	340290	BW-½-150	Br.-Grn.-Br. Output Cathode
33	1000Ω	1	370490	BTA-1000	Br.-Blk.-Red Filter
34	220KΩ	½	321050	BTS-220K	Red-Red-Yl. Line Isolation
35	15Ω	2	340050	BW-2-15	Br.-Grn.-Blk. Rectifier Ballast
36	10Ω	½	340010	BW-½-10	Br.-Blk.-Blk. Series Pilot Light

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
37	2100Ω	4.6Ω	142Ω tapped @ 7Ω	.8Ω	734080	A-3876*		A2928*	*Add extra filter to reduce hum level.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			EMERSON PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
38	PM	4.6Ω	180008			
	CONE DIA.	VC DIA.				
39	4"x6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

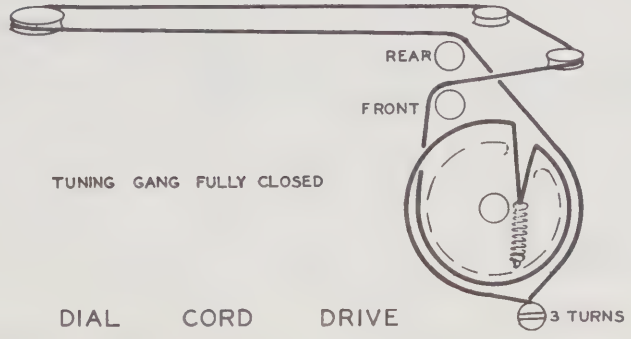
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
40	Loop Ant.	.1Ω	1.5Ω	700010		
41A	Osc. Coil	.7Ω	6Ω	716005	14-1040	Add 50MMFD from grid to high side tuning cap
B	" "			716070		Used in chassis model 120006.
42	Wave Trap		70Ω	708060		
43	Input IF	31Ω	20Ω	720380	16-6658	
44	Output IF	28Ω		720390	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					EMERSON PART No.		
45	Bayonet	6-8	0.15	Brown	807000		Type 47

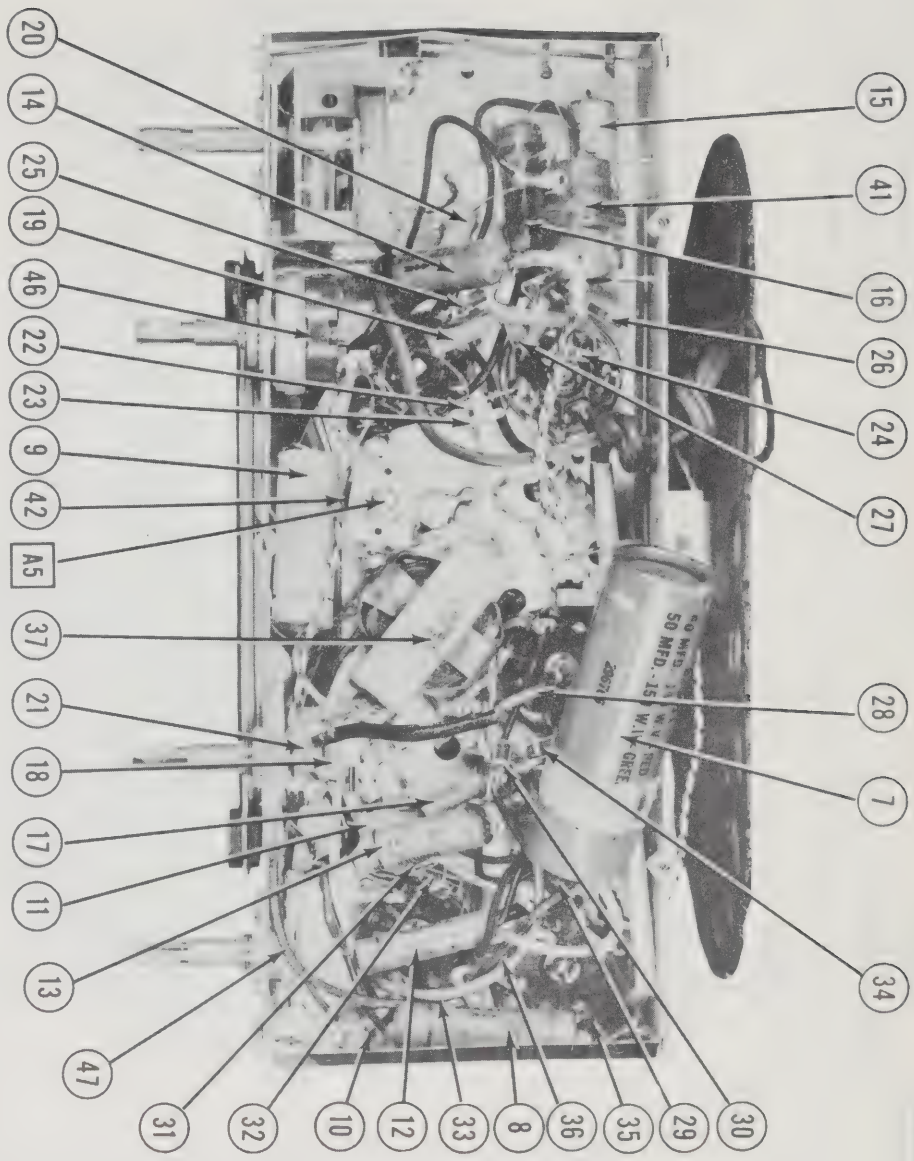
MISCELLANEOUS

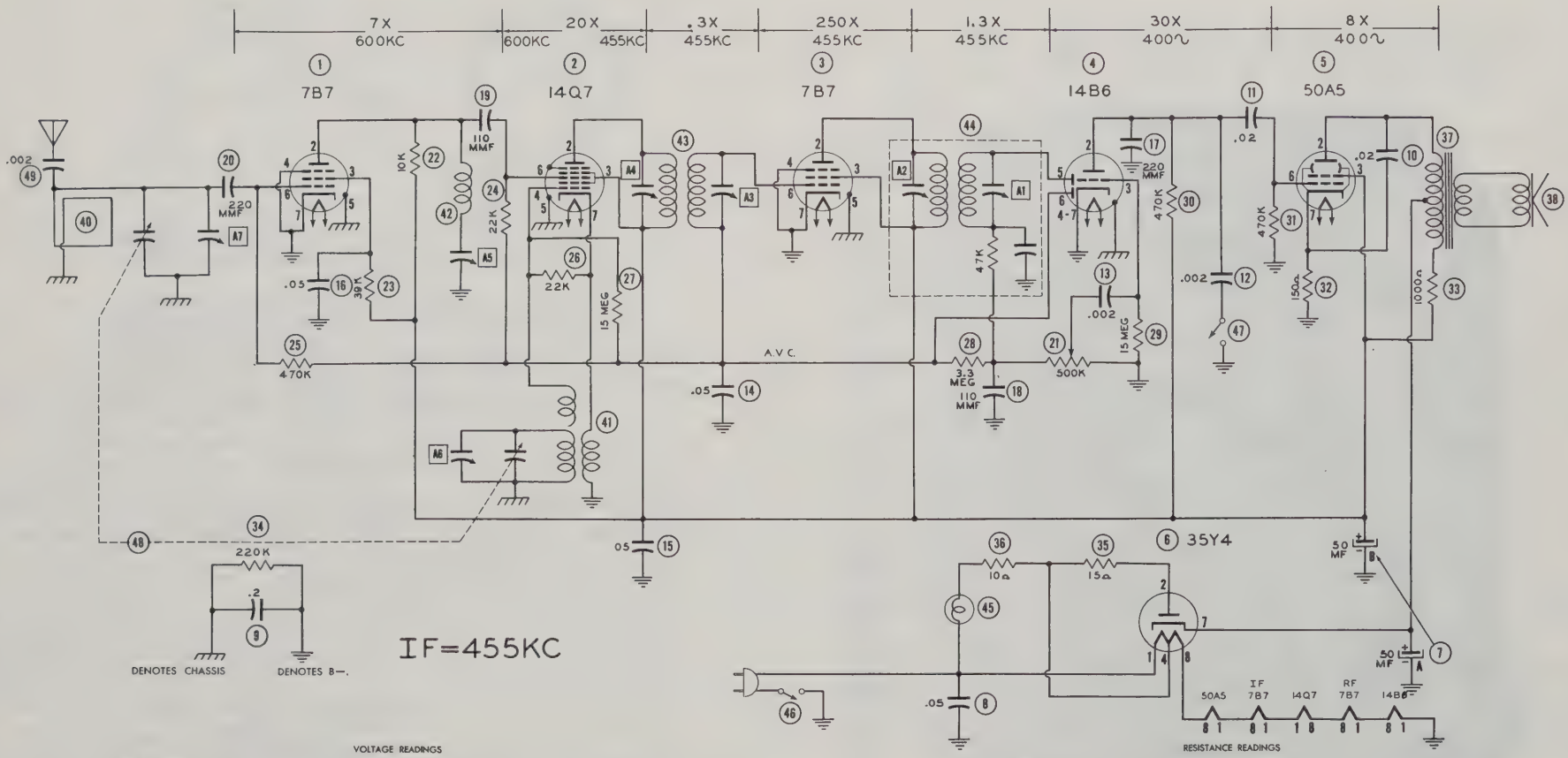
ITEM No.	PART NAME	EMERSON PART No.	NOTES
46	Switch	510200	Power
47	Tone Switch	510120	
48	2 Gang Var. Cap	900070	(27-385MMF, 22-185MMF)
	Dial Backplate	520360	
	Dial Pointer	525012	
	Dial Glass	520450	
	Knob	460140	Brown



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	12VAC	53VDC	53VDC	0V.	0V.	-.6VDC	0V.	18VAC
2	14Q7	32VAC	88VDC	88VDC	-9.7VDC§	0V.	-.6VDC	0V.	18VAC
3	7B7	32VAC	88VDC	88VDC	0V.	0V.	-.7VDC	0V.	38VAC
4	14B6	0V.	56VDC	-.8VDC	0V.	-.2VDC	-.7VDC	0V.	12VAC
5	50A5	38VAC	111VDC	88VDC	0V.	0V.	0V.	5.8VDC	87VAC
6	35Y4	117VAC	112VAC	0V.	113VAC	117VDC	115VAC	117VDC	87VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	13Ω	60KΩ	90KΩ	0Ω	0Ω	4 Meg.	0Ω	20Ω
2	14Q7	32Ω	50KΩ	50KΩ	22KΩ	230KΩ	3.2 Meg.	.7Ω	20Ω
3	7B7	32Ω	50KΩ	50KΩ	0Ω	0Ω	3.2 Meg.	0Ω	38Ω
4	14B6	0Ω	520KΩ	15 Meg.	0Ω	650KΩ	3.2 Meg.	0Ω	13Ω
5	50A5	38Ω	50KΩ	50KΩ	INF.	0Ω	450KΩ	150Ω	90Ω
6	35Y4	120Ω	130Ω	INF.	117Ω	50KΩ	120Ω	50KΩ	90Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

482-6

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FADA
MODEL 700

FADA
MODEL 700

FADA MODEL 700

TRADE NAME	Fada, Model 700
MANUFACTURER	Fada Radio and Electric Co., Inc., Long Island City, N.Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12BA6 RF Amp., 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 35B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	528-1680KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position, output of signal generatorshould be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	456KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	"	"	Tuning cap. fully closed.	"	A5	Adjust for minimum output.
3		Loop	1680KC	Tuning cap. fully open.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	1500KC	Tune for maximum output.	"	A7	Adjust for maximum output.

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DATE 1/48 SET #32 FOLDER #482-7

PARTS LIST AND DESCRIPTIONS

FADA MODEL 700

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FADA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12BA6	12BA6	7BK	
2	Converter	12BE6	12BE6	7CH	
3	IF Amp.	12BA6	12BA6	7BK	
4	Det.-AVC-AF	12AT6	12AT6	7BT	
5	Power Output	35B5	35B5	7BZ	
6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FADA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	150	25-19	DY-403020-150	EL-224	AF644D	UP4325	■ Filter
B	40	150			UT-121	PRS150-12		▲ "
C	20	150						"
8	.05	400	12.12	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
9	.02	400	12.9	S-4-03	TC-13	484-03	DT4S3	Output Plate Bypass
10	.01	600	12.6	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
11	.005	600	12.4	S-6-005	TC-25	684-005	DT6D5	" "
12	.01	400	12.5	S-4-01	TC-11	484-01	DT4S1	IF Cathode Bypass†
13	.05	200	12.11	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	.05	600	12.11	S-6-05	TC-15	684-05	DT4S5	RF Bypass Pwr. Supply†
15	250		17.22	MO.5-325	1FM-325	1468-00025	5W5T25	AF Plate Bypass Cer.
16	250		17.22	MO.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter "
17	100		17.21	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Cap. "
18	100		17.21	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling "

†Not used in some models.

CONTROLS

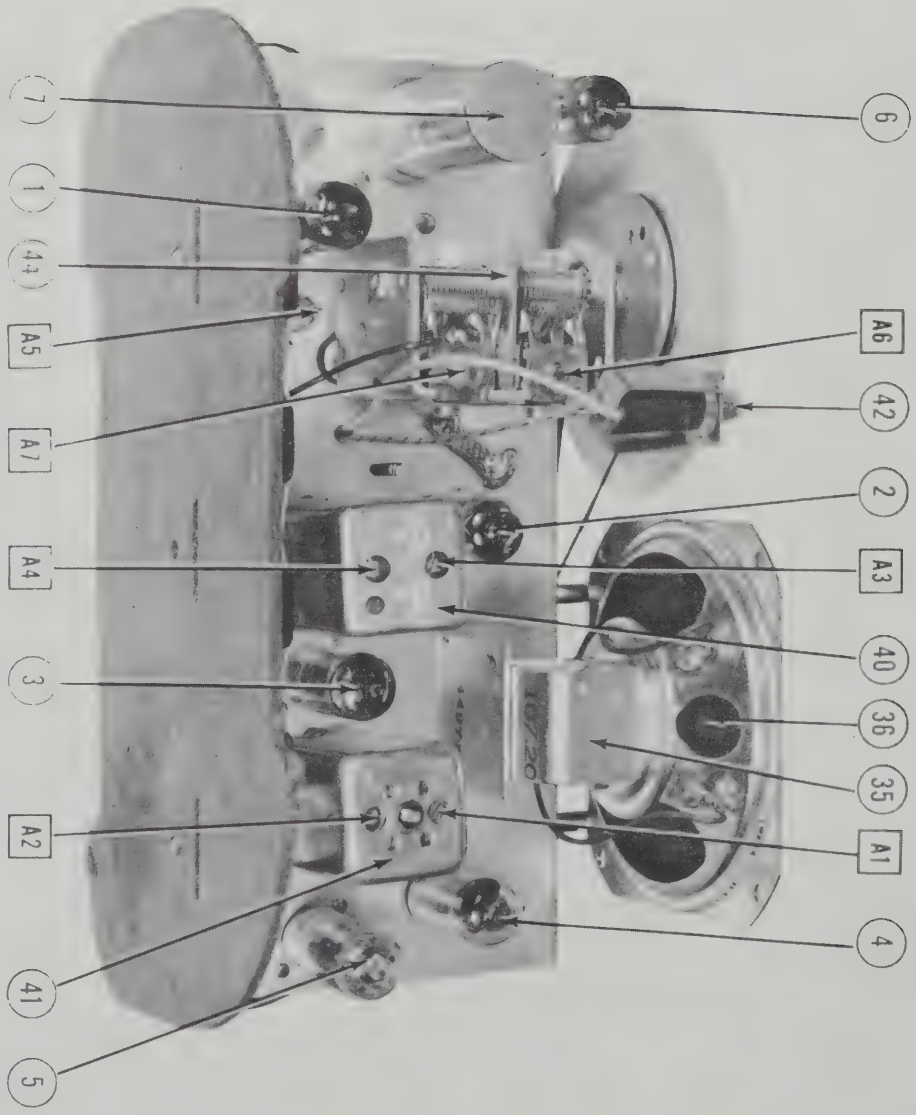
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FADA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	500KΩ	½	52.16	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 19A per instructions
C	Switch		" "	41	M26	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FADA PART No.	IRC PART No.	IDENTIFICATION CODES
20	68Ω	½	32.1	BW-½-68	Blue-Gray-Blk. RF Cathode
21	6800Ω	½	32.10	BTS-6800	Blue-Gray-Red RF Plate Load
22	100KΩ	½	32.17	BTS-100K	Br.-Blk.-Yl. Converter Grid
23	22KΩ	½	32.13	BTS-22K	Red-Red-Or. Oscillator Grid
24	68Ω	½	32.1	BW-½-68	Blue-Gray-Blk. IF Cathode-See Note 1
25	1 Meg.	½	32.23	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
26	3.9 Meg.	½	32.26	BTS-3.9 Meg.	Or.-White-Grn. AF Grid
27	220KΩ	½	32.18	BTS-220K	Red-Red-Yl. AF Plate Load
28	470KΩ	½	32.20	BTS-470K	Yl.-Vi.-Yl. Output Grid
29	120Ω	½	32.3	BW-½-120	Br.-Or.-Br. Output Cathode
30	510Ω	1	32.28	BTA-1000	White-Br.-Br. Filter
31	200Ω	1	32.27	BW-1-220	Red-Blk.-Br. "
32	27Ω	½	32.49	BW-½-27	Red-Vi.-Blk. Surge Limiter
33	30Ω	1	117.1	BW-1-33	Or.-Blk.-Blk. Line Dropping

Note 1 - Some models use 1200Ω in this application. IRC replacement BTS-1000.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		FADA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
34	2000Ω	3.4Ω	130Ω	.5Ω	42.5	A-3676	T2284S	A-2[illegible]	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			FADA PART No.	JENSEN PART No.		
35	FIELD PM	VC IMP. 3.4Ω	107.20	ST-113* Mod. P4-X		*Fabricate new mounting bracket.
36	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

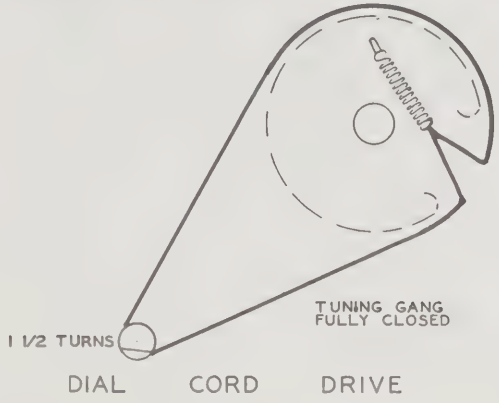
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	FADA PART No.	MEISSNER PART No.	
37	Loop Ant.		.9Ω	37.64		
38	Wave Trap		INF.	37.66		
39	Osc. Coil		6.8Ω	37.57	14-1040	Tapped at .8Ω
40	Input IF	24Ω	24.5Ω	37.61	16-6658	
41	Output IF	23Ω	23Ω	37.33	16-6660	

DIAL LIGHT

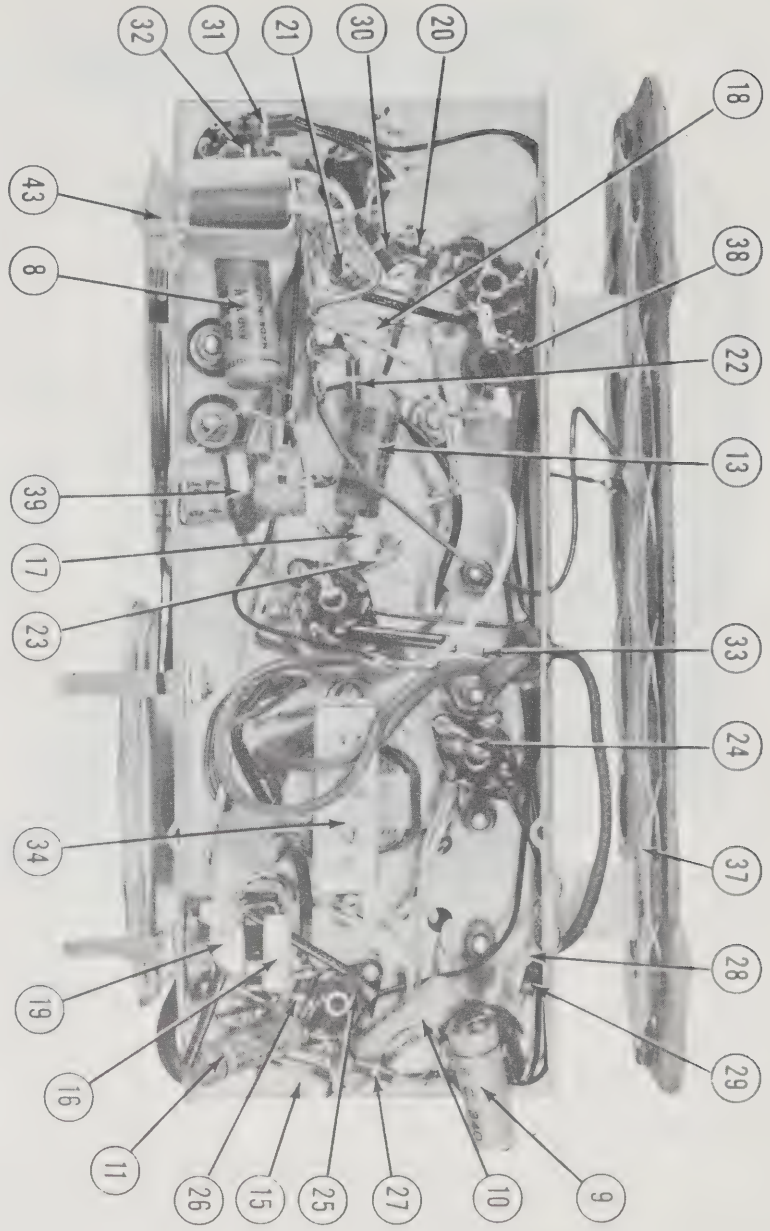
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					FADA PART No.		
42	Bayonet	3.2	0.16	White	123.3		Type 1430
43	"	"	"	"	123.8		" "

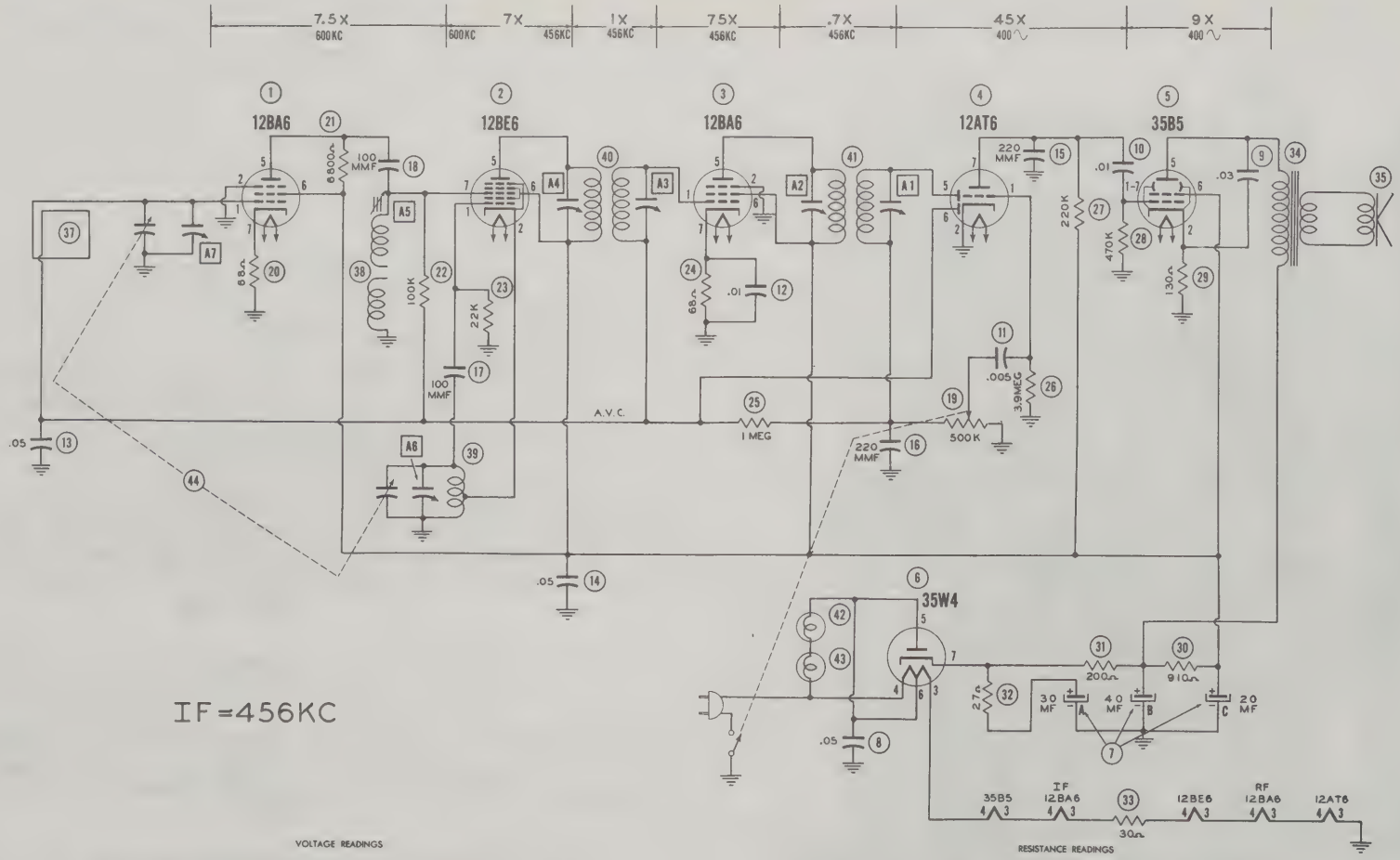
MISCELLANEOUS

ITEM No.	PART NAME	FADA PART No.	NOTES
44	2 Gang Var. Cap.	27.18	(24-465 MMF, 33-105MMF)



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BA6	-.4VDC	0V.	12VAC	24.5VAC	45VDC	80VDC	.5VDC
2	12BE6	-13VDC§	0V.	24.5VAC	37VAC	80VDC	80VDC	-.4VDC
3	12BA6	-.4VDC	0V.	42VAC	52VAC	80VDC	80VDC	.6VDC
4	12AT6	-.7VDC	0V.	0V.	12VAC	-.4VDC	-.4VDC	37VDC
5	35B5	0V.	4.5VDC	82VAC	87VAC	100VDC	80VDC	0V.
6	35w4	117VDC	0V.	87VAC	117VAC	113VAC	113VAC	117VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BA6	1.4 Meg.	0Ω	12Ω	24Ω	107KΩ	100KΩ	70Ω
2	12BE6	21KΩ	.8Ω	24Ω	36Ω	100KΩ	100KΩ	1.4 Meg.
3	12BA6	1.4 Meg.	0Ω	68Ω	80Ω	100KΩ	100KΩ	70Ω
4	12AT6	4 Meg.	0Ω	0Ω	12Ω	500KΩ	1.4 Meg.	320KΩ
5	35B5	450KΩ	130Ω	80Ω	110Ω	100KΩ	100KΩ	480KΩ
6	35w4	100KΩ	INF.	110Ω	135Ω	132Ω	132Ω	100KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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482-7

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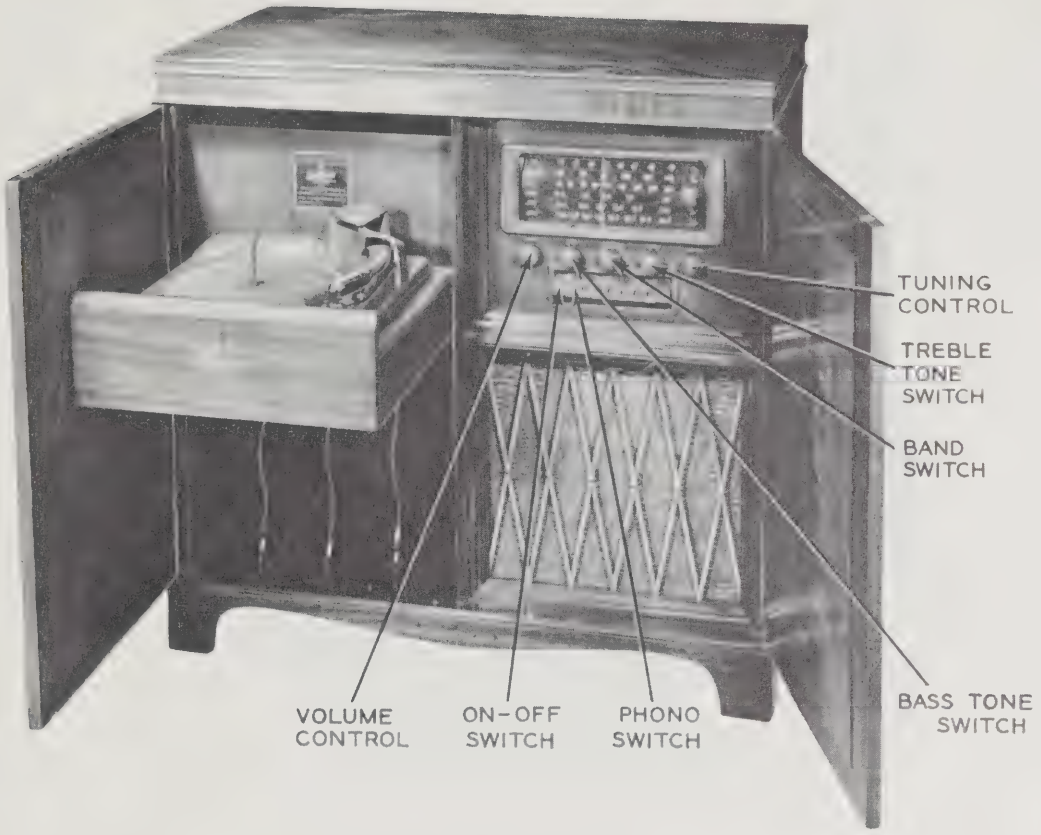
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

GENERAL ELECTRIC MODELS
41, 42, 43, 44, 45



MUSAPHONIC MODEL 41

TRADE NAME	General Electric (Musaphonic) Models, 41, 42, 43, 44, 45
MANUFACTURER	General Electric Co., Appl. & Merch. Dept., Bridgeport, Conn.
TYPE SET	AC Operated Combination Phono-Radio Multi-Band AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (SIXTEEN)	Types, 6AK5 or 6AG5 RF Amp., 6AK5 Converter, 6AK5 Oscillator, 6SG7 IF Amp., 6SV7 IF Amp., 6SV7 AM Det.-FM Limiter, 6AQ7GT FM Disc.-AF Cathode Follower, 6AL7GT Tuning Ind., 6SQ7 AF Amp., 6SC7 Phono Pre-Amp., 6SN7GT AF-Phase Inv., (4) 6V6GT Power Output, 5U4G Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	1.35 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC SHORT WAVE 9.4-9.8MC, 11.5-12.0MC, 14.8-15.5MC FREQ. MOD. 42-49MC, 88-108MC

PUSHBUTTON ADJUSTMENTS

Range of pushbuttons reading from left to right are 540-1050KC, 540-1050KC, 540-1050KC, 850-1520KC, 850-1520KC, 1000-1600KC.

Make up a list of stations desired to be set up. Ranging from low to high freq. stations, making certain each station falls within range of its button.

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Depress dial button and tune in first station.
3. Depress left station selector button and adjust B1 to tune in station.
4. Adjust B2 for maximum volume.
5. To set up the remaining buttons follow same procedure outline above, adjusting B3, B5, B7, B9 and B11 to tune in station and B4, B6, B8, B10 and B12 for maximum volume.

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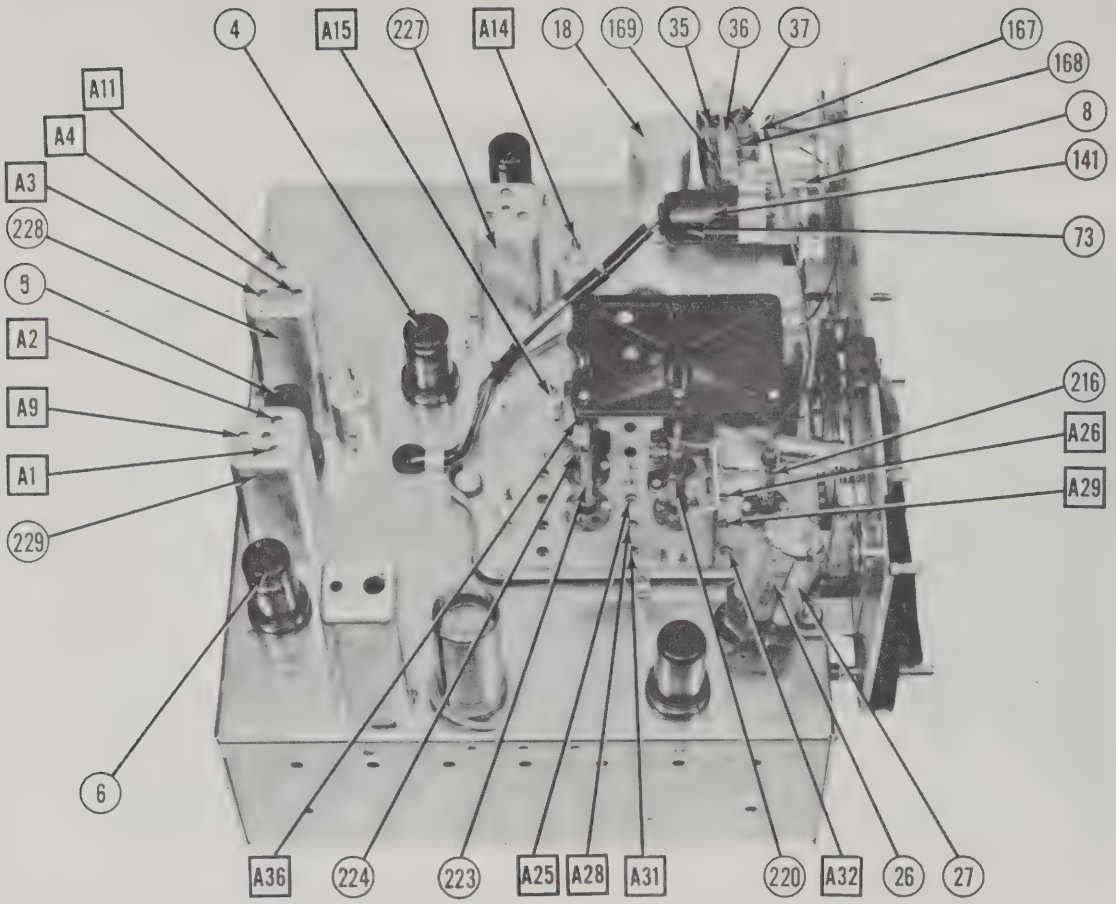
DATE 1/48 SET #32 FOLDER #482-8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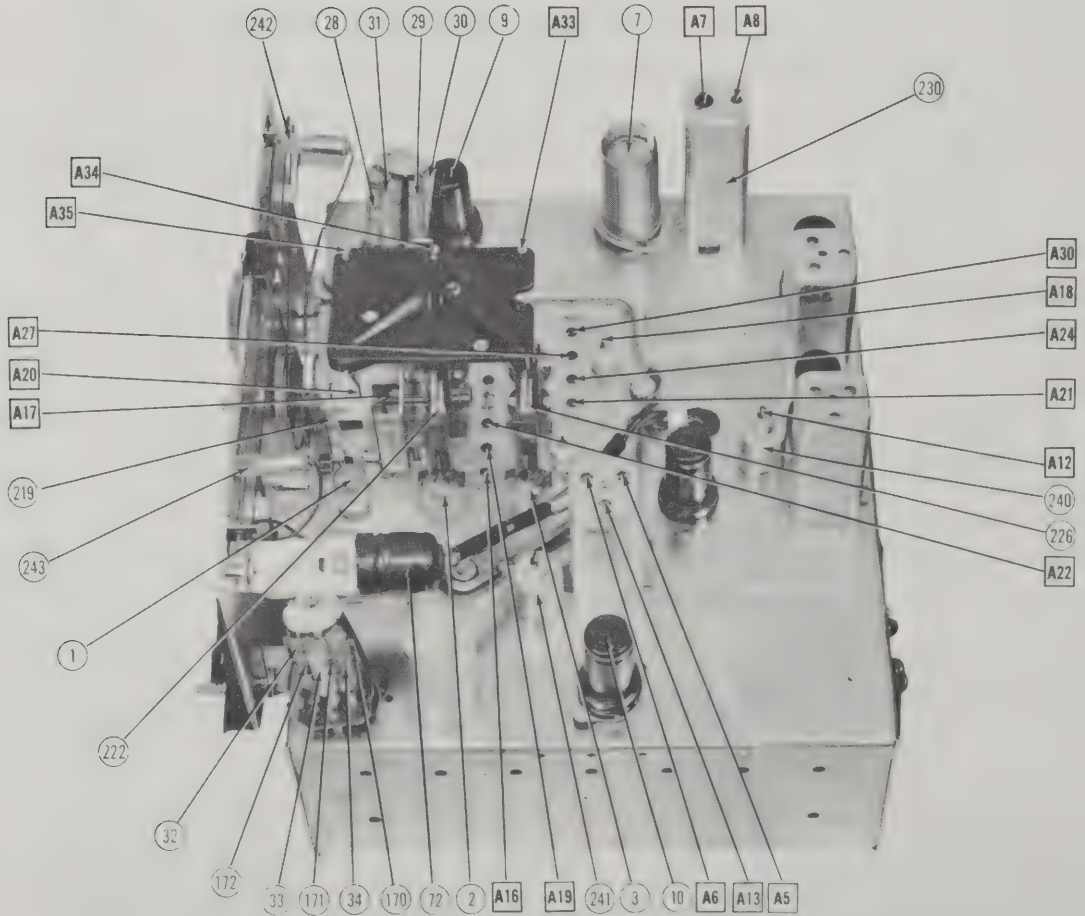
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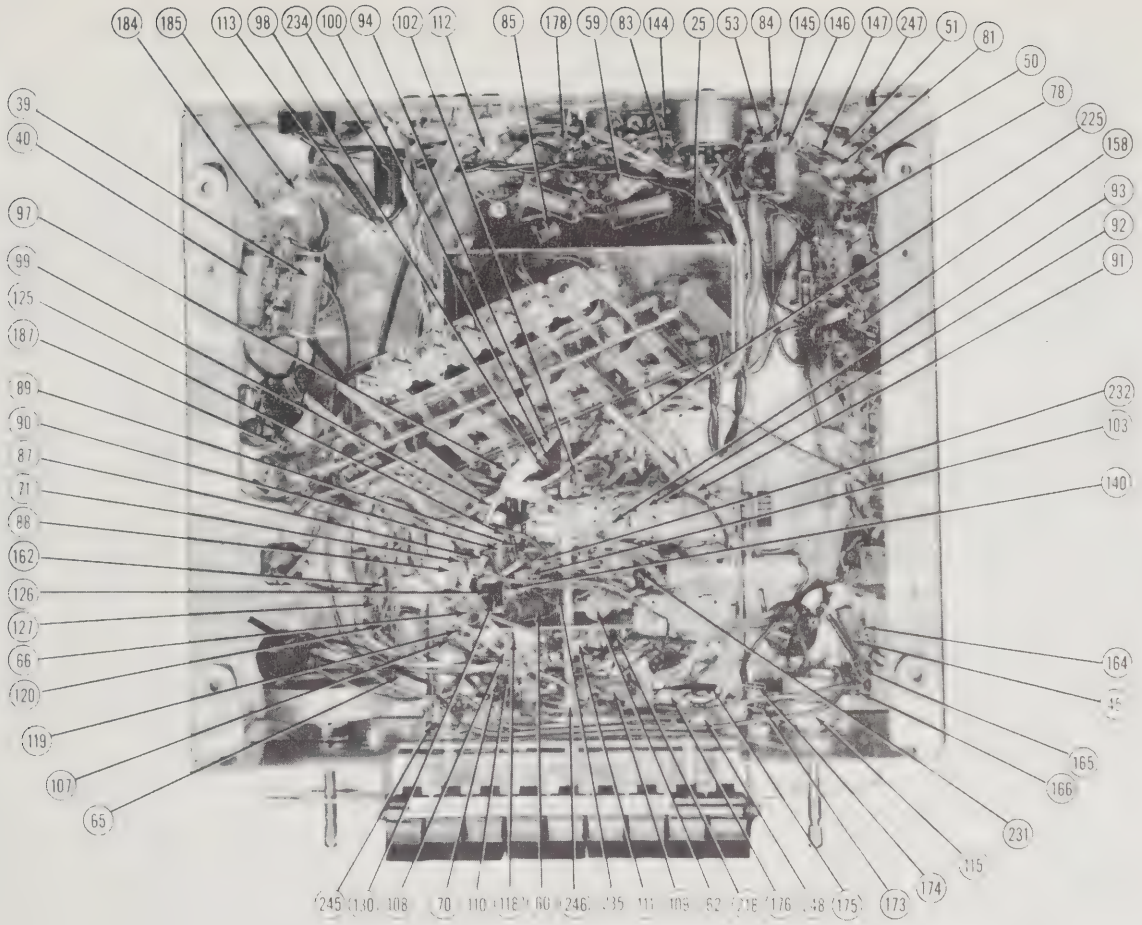
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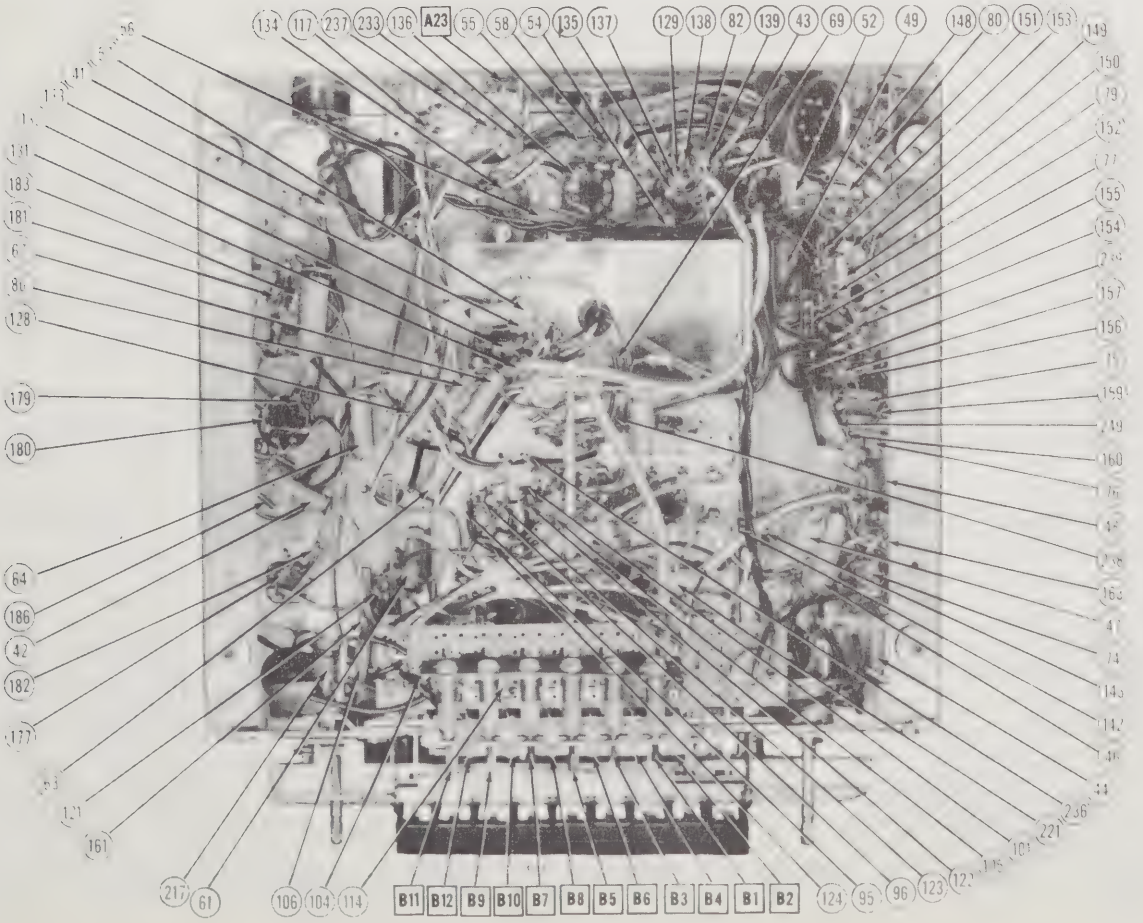
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GEN. ELECT. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	RF Amp.	6AK5	6AK5	7BD	
B	" "	6AG5	6AG5	7BD	
2	Converter	6AK5	6AK5	7BD	
3	Oscillator	6AK5	6AK5	7BD	
4	IF Amp.	6SG7	6SG7	8BK	
5	IF Amp.	6SV7	6SV7	7AZ	
6	AM-Det. & FM Limiter	6SV7	6SV7	7AZ	
7	FM Discrim.- Audio Cathode Follower	6AQ7GT	6AQ7GT	8CK	
8	Tuning Indicator	6AL7GT	6AL7GT	8CH	
9	Audio Amp.	6SQ7	6SQ7	8Q	
10	Phono Pre-Amp.	6SC7	6SC7	8S	
11	AF & Phase Inv.	6SN7GT	6SN7GT	8BD	
12	Power Output	6V6GT	6V6GT	7AC	
13	" "	6V6GT	6V6GT	7AC	
14	" "	6V6GT	6V6GT	7AC	
15	" "	6V6GT	6V6GT	7AC	
16	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GEN. ELECT. PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
17A	30	450	RCE-019	DY-403*	EL-424*	AF4444J		◓ Filter
B	15	450						■ "
C	30	450						▲ "
D	30	50		M-25-50	TA-550			Cathode Bypass
18A	30	400	RCE-032	DY-2x30-450	EL-240	AF88J	UP3345	◓ Filter
B	30	350						▲ "
19	.002	1000	UCC-056	TM-16-002	TR-22	1084-002	MD16D2	Output Plate Bypass
20	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	Audio Coupling
21	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	" "
22	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	" "
23	.02	600	UCC-041	S-6-02	TC-12	684-02	DT6S2	" "
24	.001	600	UCC-035	S-6-001	TC-22	684-001	DT6D1	AF Plate Bypass
25	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	Fil. Bypass
26	.03	600	UCC-042	S-6-03	TC-13	684-03	DT6S3	Tone Comp.
27	.02	600	UCC-041	S-6-02	TC-12	684-02	DT6S2	" "
28	.03	600	UCC-042	S-6-03	TC-13	684-03	DT6S3	" "
29	.03	600	UCC-042	S-6-03	TC-13	684-03	DT6S3	" "
30	.02	600	UCC-041	S-6-02	TC-12	684-02	DT6S2	" "
31	.03	600	UCC-042	S-6-03	TC-13	684-03	DT6S3	" "
32	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	" "
33	.004	600	RCC-038	S-6-004	TC-24	684-004	DT6D4	" "
34	.002	600	UCC-036	S-6-002	TC-22	684-002	DT6D2	" "
35	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	" "
36	.004	600	RCC-038	S-6-004	TC-24	684-004	DT6D4	" "
37	.002	600	UCC-036	S-6-002	TC-22	684-002	DT6D2	" "
38	.01	600	RCM-001	S-6-01	TC-11	684-01	DT6S1	Phono Motor Sw. Bypass
39	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	Phono Coupling
40	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	Audio Coupling
41	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	Tone Compensation
42	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
43	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	T. B. Plate Bypass
44	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	AF Grid Decoup.
45	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	Feedback
46	.02	600	UCC-041	S-6-02	TC-12	684-02	DT6S2	Audio Coupling
47	.1	600	UCC-048	S-6-.1	TC-1	684-1	DT6P1	" "
48	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	" "
49	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	Tuning Indc. Filter
50	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	Limiter Decoup.
51	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	Squelch Coupling
52	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	Limiter Screen Byp.
53	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	Limiter Screen Decoup.
54	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	IF Plate Decoup.
55	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	IF Cathode Bypass
56	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	IF Plate Decoup.
57	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	IF Screen Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GEN. ELECT. PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
58	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1		RF Bypass Pwr. Supply
59	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1		AVC Filter
60	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1		RF Bypass Pwr. Supply
61	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1		Conv. Screen Bypass
62	.02	600	UCC-041	S-6-02	TC-12	684-02	DT6S2		RF Plate Decoup.
63	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1		Conv. Plate Decoup.
64	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1		RF Bypass Pwr. Supp.
65	.02	600	UCC-041	S-6-02	TC-12	684-02	DT6S2		RF Screen Decoup.
66	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5		AVC Filter
67	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1		IF Cathode Bypass
68	.01	600	RCM-002	S-6-01	TC-11	684-01	DT6S1		Line Filter - See Note 1
69	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1		AVC Filter
70	100	500	RCW-1028	MO.5-31	1FM-31	1468-0001	5W5T1		Fil. Bypass
71	100	500	RCW-1028	MO.5-31	1FM-31	1468-0001	5W5T1		" "
72	100	500	RCW-1028						RF Bypass
73	100	500	RCW-1028						" "
74	47	500	UCU-020	MO.5-45	1FM-45	1468-00005	5W5Q5		AF Plate Bypass
75	47	500	UCU-520	MO.5-45	1FM-45	1468-00005	5W5Q5		AF Grid Bypass
76	47	500	UCU-520	MO.5-45	1FM-45	1468-00005	5W5Q5		AF Plate Bypass
77	100	500	UCW-1028	MO.5-31	1FM-31	1468-0001	5W5T1		RF Filter
78	100	500	RCW-1028	MO.5-31	1FM-31	1468-0001	5W5T1		" "
79	47	500	UCU-520	MO.5-45	1FM-45	1468-00005	5W5Q5		Limiter Plate Decoup.
80	100	500	RCW-1028	MO.5-31	1FM-31	1468-0001	5W5T1		Squelch Filter
81	47	500	UCU-520	MO.5-45	1FM-45	1468-00005	5W5Q5		Lim. Screen Bypass
82	22	500	UCU-012	MO.5-425	MS-425	1468-000025	5W5Q25		RF Filter
83	22	500	UCU-012	MO.5-425	MS-425	1468-000025	5W5Q25		" "
84	100	500	RCW-1028	MO.5-31	1FM-31	1468-0001	5W5T1		RF Bypass Pwr. Supply
85	27	500	UCW-1014	MO.5-425	MS-425	1468-000025	5W5Q25		Fixed Trimmer
86	220	500	UCU-536	MO.5-325	1FM-325	1468-00025	5W5T25		IF Coupling
87	27	500	UCW-1014	MO.5-425	MS-425	1468-000025	5W5Q25		Conv. Plate Bypass
88	470	500	UCU-544	MO.5-35	1FM-35	1468-0005	5W5T5		Conv. Screen Bypass
89	4.7		RCW-025						FM RF Coupling
90	100	500	RCW-1028	MO.5-31	1FM-31	1468-0001	5W5T1		RF Coupling
91	22	500	UCU-1512	MO.5-425	MS-425	1468-000025	5W5Q25		Osc. Coupling
92	20	500							" "
93	4.7		RCW-025						" "
94	4.7		RCW-025						FM Osc. Grid
95	470	500	UCU-544	MO.5-35	1FM-35	1468-0005	5W5T5		Osc. Plate & Screen Byp.
96	22	500	UCU-1512	MO.5-425	MS-425	1468-000025	5W5Q25		Osc. Cathode Byp.
97	47	500	UCU-520	MO.5-45	1FM-45	1468-00005	5W5Q5		Osc. Grid
98	120	500							Fixed Trimmer
99	68	500	UCW-1024						Feedback
100	10	500	UCW-1004	MO.5-41	1FM-41	1468-00001	5W5Q1		"
101	1.5		UCN-502						FM Osc. Coupling
102	10	500	UCW-1004	MO.5-41	1FM-41	1468-00001	5W5Q1		" " "
103	47	500	UCU-520	MO.5-45	1FM-45	1468-00005	5W5Q5		RF Coupling
104	3.3		UCN-1504						" "
105	22	500	UCW-012	MO.5-425	MS-425	1468-000025	5W5Q25		" "
106	680	500	UCG-2048						Fixed Trimmer
107	820	500	UCN-1550						RF Screen Bypass
108	100	500	RCW-1028	MO.5-31	1FM-31	1468-0001	5W5T1		RF Coupling
109	100	500	RCW-1028	MO.5-31	1FM-31	1468-0001	5W5T1		Fixed Trimmer
110	27	500	UCW-1014	MO.5-425	MS-425	1468-000025	5W5Q25		" "
111	6.8		UCN-506						Ext. Ant. Coupling
112	150	500	UCU-1532	MO.5-315	1FM-315	1468-00015	5W5T15		RF Bypass
113	100	500	RCW-1025	MO.5-31	1FM-31	1468-0001	5W5T1		Ft. Ant. Coupling
114	10	500	UCU-1004	MO.5-41	1FM-41	1468-00001	5W5Q1		RF Coupling
249	47	500							Tone Comp.
250	6.8		UCN-506						RF Coupling Cer.

Note 1 - Used in Model 44 only.
* Do not use bypass section.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELECT. PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
115A	2 Meg.	½	RRC-050			Volume Control-Front section
B	2 Meg.					" " -Rear section
116	100Ω	2	RRW-016	W-100	43-100	Hum Balance Control

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GEN. ELECT. PART No.	IRC PART No.	
117	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn. External Antenna Loading
118	1.5 Meg.	½	URD-125	BTS-1.5 Meg.	Br.-Grn.-Grn. RF Grid
119	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red RF Screen Decoupling
120	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. RF Screen Dropping
121	10KΩ	1	URE-073	BTA-10K	Br.-Blk.-Or. RF Plate Decoupling
122	33Ω	2	URD-013	BW-½-33	Or.-Or.-Blk. Parasitic Suppressor
123	22KΩ	½	URD-081	BTS-22K	Red-Red-Or. Oscillator Grid
124	220Ω	½	URD-033	BW-½-220	Red-Red-Br. Oscillator Plate Decoupling
125	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn. Oscillator Coupling
126	1.5 Meg.	½	URD-125	BTS-1.5 Meg.	Br.-Grn.-Grn. Converter Grid
127	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Converter Screen Dropping
128	15KΩ	½	URD-077	BTS-15K	Br.-Grn.-Or. Converter Plate Decoupling
129	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
130	1.5 Meg.	½	URD-125	BTS-1.5 Meg.	Br.-Grn.-Grn. AVC Network
131	470KΩ	½	URD-127	BTS-470K	Yl.-Vi.-Yl. 1st IF Grid
132	220Ω	½	URD-033	BW-½-220	Red-Red-Br. 1st IF Cathode
133	4700Ω	½	URD-065	BTS-4700	Yl.-Vi.-Red 1st IF Screen Dropping
134	2200Ω	½	URD-057	BTS-2200	Red-Red-Red 1st IF Plate Decoupling
135	470KΩ	½	URD-127	BTS-470K	Yl.-Vi.-Yl. AVC Network
136	470Ω	½	URD-041	BTS-470	Yl.-Vi.-Br. 2nd IF Cathode
137	2200Ω	½	URD-057	BTS-2200	Red-Red-Red 2nd IF Plate Decoupling
138	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Diode Load
139	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Diode Load
140	47KΩ	1	URE-089	BTA-47K	Yl.-Vi.-Or. Bleeder
141	4700Ω	½	URD-065	BTS-4700	Yl.-Vi.-Red Tuning Eye Cathode
142	18KΩ	2	URF-079	BT-2-18K	Br.-Gray-Or. Bleeder
143	18KΩ	2	URF-079	BT-2-18K	Br.-Gray-Or. "
144	68KΩ	½	URD-093	BTS-68K	Blue-Gray-Or. Diode RF Filter
145	120KΩ	½	URD-099	BTS-120K	Br.-Red-Yl. Limiter Screen Dropping
146	2200Ω	½	URD-057	BTS-2200	Red-Red-Red Limiter Screen Decoupling
147	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn. Squelch Diode Load
148	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. AF Bias Filter
149	10KΩ	1	URE-073	BTA-10K	Br.-Blk.-Or. Squelch Coupling
150	22KΩ	½	URD-081	BTS-22K	Red-Red-Or. Limiter Plate Decoupling
151	2200Ω	½	URD-057	BTS-2200	Red-Red-Red " " "
152	470KΩ	½	URD-127	BTS-470K	Yl.-Vi.-Yl. De-emphasis
153	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn. Tuning Ind. Grid Filter
154	120KΩ	½	URD-099	BTS-120K	Br.-Red-Yl. Discriminator Diode Load
155	120KΩ	½	URD-099	BTS-120K	Br.-Red-Yl. " " "
156	2700Ω	½	URD-059	BTS-2700	Red-Vi.-Red 1st AF Cathode
157	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. 1st AF Cathode
158	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Grid
159	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red Tone Compensation
160	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red " "
161	8200Ω	2	URD-071	BT-2-8200	Gray-Red-Red Filter
162	8200Ω	2	URD-071	BT-2-8200	Gray-Red-Red Filter
163	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. 2nd AF Plate Load
164	6.8 Meg.	½	URD-141	BTS-6.8 Meg.	Blue-Gray-Grn. 2nd AF Grid
165	470KΩ	½	URD-127	BTS-470K	Yl.-Vi.-Yl. Feedback
166	47KΩ	½	URD-089	BTS-47K	Yl.-Vi.-Or. Audio Coupling
167	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. Tone Compensation
168	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. " "
169	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. " "
170	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. " "
171	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. " "
172	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. " "
173	22KΩ	½	URD-081	BTS-22K	Red-Red-Or. " "
174	22KΩ	½	URD-081	BTS-22K	Red-Red-Or. " "
175	330KΩ	½	URD-109	BTS-330K	Or.-Or.-Yl. " "
176	330KΩ	½	URD-109	BTS-330K	Or.-Or.-Yl. " "
177	33KΩ	½	URD-085	BTS-33K	Or.-Or.-Or. Phono Amp. Decoupling
178	8200Ω	½	URD-071	BTS-8200	Gray-Red-Red Phono Shunt
179	4.7 Meg.	½	URD-137	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st Phono Amp. Grid
180	4.7 Meg.	½	URD-137	BTS-4.7 Meg.	Yl.-Vi.-Grn. 2nd Phono Amp. Grid
181	82KΩ	½	URD-085	BTS-82K	Gray-Red-Or. 1st Phono Amp. Plate Load
182	82KΩ	½	URD-085	BTS-82K	Gray-Red-Or. 2nd Phono Amp. " "
183	470KΩ	½	URD-127	BTS-470K	Yl.-Vi.-Yl. Tone Compensation
184	27KΩ	½	URD-083	BTS-27K	Red-Vi.-Or. " "
185	180KΩ	½	URD-103	BTS-180K	Br.-Gray-Yl. " "
186	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn." "
187	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn." " - See Note
188	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn. 3rd AF Grid
189	47KΩ	½	URD-089	BTS-47K	Yl.-Vi.-Or. 3rd AF Plate Load
190	1800Ω	½	URD-055	BTS-1800	Br.-Gray-Red 3rd AF Cathode

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GEN. ELECT PART No.	IRC PART No.	
191	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn. Phase Inverter Grid
192	2700Ω	½	URD-059	BTS-2700	Red-Vi.-Red Phase Inverter Cathode
193	33KΩ	½	URD-085	BTS-33K	Or.-Or.-Or. Phase Inverter Cathode
194	33KΩ	½	URD-085	BTS-33K	Or.-Or.-Or. Phase Inverter Plate Load
195	220KΩ	½	URD-105	BTS-220K	Red-Red-Yl. Output Grid
196	220KΩ	½	URD-105	BTS-220K	Red-Red-Yl. Output Grid
197	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red Parasitic Suppressor
198	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red " "
199	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red " "
200	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red " "
201	100Ω	½	URD-025	BW-½-100	Br.-Blk.-Br. " "
202	100Ω	½	URD-025	BW-½-100	Br.-Blk.-Br. " "
203	100Ω	½	URD-025	BW-½-100	Br.-Blk.-Br. " "
204	100Ω	½	URD-025	BW-½-100	Br.-Blk.-Br. " "
205	18KΩ	½	URD-079	BTS-18K	Br.-Gray-Or. Feedback
206	5600Ω	1	URE-067	BTA-5600	Grn.-Blue-Red Tone Compensation
207A	900Ω	6	RRT-001	AB-1000	Filter
B	150Ω	6		AB-150	Output Cathode

Note-Not used in all models

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	GEN. ELECT. PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
208	.175A	120Ω	8 Henries	RLF-010	C-1410†	T20C54†		†Drill new mounting holes.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	GEN. ELECT. PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
209	117V AC @ 1.25A	610V CT @ .175A	5.0V AC @ 3.0A	6.4V AC @ 3.0A	RTP-035			
				SEC. 4 6.3V AC @ 3.0A				

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GEN. ELECT. PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
210	7000Ω CT	5Ω	110Ω CT	.15Ω	RTO-026	A-3303†	T22S64†		†Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GEN. ELECT. PART No.	JENSEN PART No.		
211	FIELD IMP.	VC IMP.	UOP-1011	ST-120 Mod. P10-S		
213	CONE DIA. 8-7/8"	VC DIA. 1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
213	FIELD IMP.	VC DIA. 10Ω	UOP-1011	ST-120 Mod. P10-S		
214	CONE DIA. 8-7/8"	VC DIA. 1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

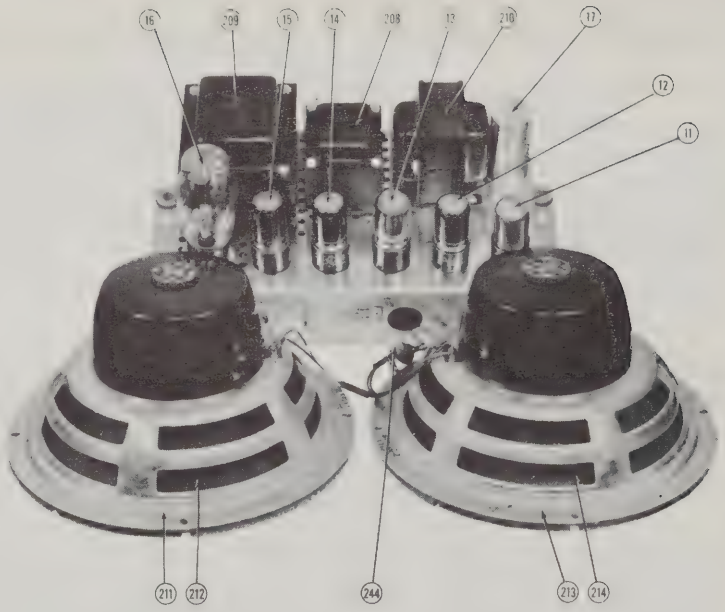
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA GEN. ELECT. PART No.	REPLACEMENT DATA MEISSNER PART No.	
215A	Loop Ant.		.1Ω	RAB-028		Model 41 Walnut
B	" "		.1Ω	RAB-029		Model 41 Mahogany
C	" "		.1Ω	RAB-030		Model 41 Blond Mahogany
D	" "		.1Ω	RAB-031		Model 42 Mahogany
E	" "		.1Ω	RAB-032		Model 43 Knotty Pine
F	" "		.1Ω	RAB-033		Model 44 Walnut
G	" "		.1Ω	RAB-034		Model 44 Mahogany
H	" "		.1Ω	RAB-035		Model 44 Champagne Finish Mahogany
I	" "		.1Ω	RAB-042		Model 42 Mahogany 50∿
J	" "		.1Ω	RAB-045		Model 45
216	BC Ant.Coil	.5Ω	6Ω	RLA-006		
217	BC FB Ant. "	40Ω .2Ω	3Ω	RLA-006		
218	SW Loop Shunt Coil		0Ω	RLI-018		
219	FM Ant. Coil		0Ω			
220	BC RF Coil	.5Ω	6Ω	RLB-006		
221	SW RF Load Coil		0Ω	RLC-017		
222	FM RF Coil		0Ω			
223	BC Osc.Coil	3.5Ω				
224	BC Osc. Shunt Coil		3.5Ω	RLC-016		
225	SW Osc.Load Coil		0Ω	RLC-015		
226	FM Osc.Coil		0Ω			
227A	AM 1st IF	4Ω	6Ω	RTC-017		Items 227A & 227B in same can.
B	FM 1st IF	4Ω	.2Ω	RTC-017		
228A	AM 2nd IF	5Ω	5Ω	RTC-022		Items 228A & 228B in same can.
B	FM 2nd IF	.2Ω	.2Ω	RTC-022		
229A	AM 3rd IF	8Ω	8Ω	RTL-043		Items 229A & 229B in same can.
B	FM 3rd IF	.2Ω	8Ω	RTL-043		
230	FM Discrim.	1Ω	1Ω 1Ω	RTD-001		
231	RF Choke		1Ω	RLB-009		
232	" "		.1Ω	RLP-018		
233	" "		.1Ω	RLA-012		
234	" "		.1Ω	RLI-005		
235	" "		1Ω	RLB-008		
236	" "		0Ω	RLI-002		
237	" "		.1Ω	RLA-012		
238	" "		.1Ω	RLA-012		
239	" "		.1Ω	RLF-003		
240	IF Plate Choke	.4Ω		RLP-005		
241	IF Plate Choke	.4Ω		RLP-005		

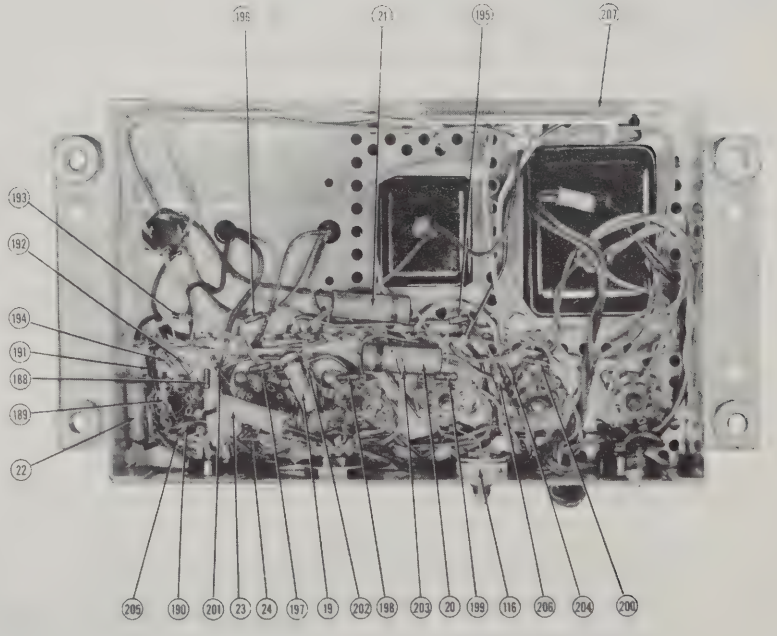
DIAL LIGHT

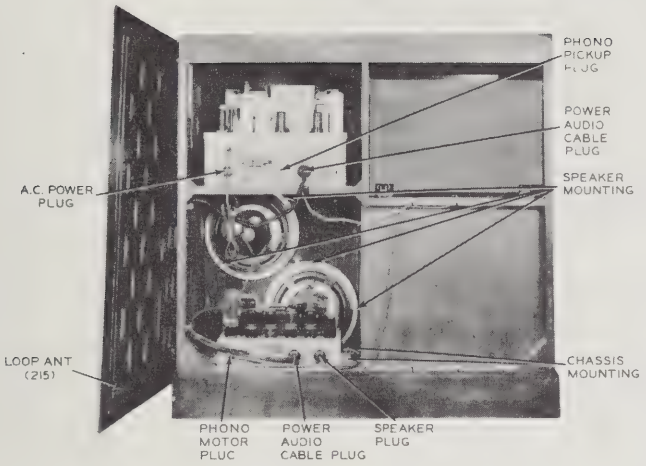
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA GEN. ELECT. PART No.		INSTALLATION NOTES
242-243	Bayonet	6-8	0.25	Blue	UDL-005		Type 44
244	"	"	0.15	Brown	UDL-008		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	GEN. ELECT. PART No.	NOTES
245	Switch		Treble Tone
246	"	RSW-029	Band
247	"	RSS-003	Squelch
248	"		Bass Tone
251	Fuse	REF-003	3AG 5 Amp. 250V
252	Switch	RSV-001	On-Off
	Trimmer Strip	RCY-017	A15, A18
	" "	RCX-027	A16, A19, A22
	" "	RCX-024	A17, A20
	" "	RCX-025	A21, A24, A27, A30
A23	Trimmer	RCY-011	BC Ant. Adj.
	Trimmer Strip	RCX-026	A25, A28, A31
	" "	RCX-028	A26, A29, A32
	" "	RCX-012	B2, B4, B6, B8, B10, B12
	Pointer Assy.	RDP-025	Model 43
	" "	RDP-026	Models 41, 42, 44, 45
	Dial Scale	RDS-045	
	PB Switch Assy.	RDX-020	Includes Coils







DISASSEMBLY INSTRUCTIONS

1. Remove five push-on type control knobs.
2. Remove wood screws holding panel on back of cabinet.
3. Remove loop antenna plug from tuning chassis.
4. Remove phono-pickup plug from tuning chassis.
5. Remove octal socket from tuning chassis.
6. Remove power supply plug from tuning chassis.
7. Remove four screws holding tuning chassis in cabinet. Remove chassis from cabinet.
8. Remove speaker plug from power supply chassis.
9. Remove phono-motor plug from power supply chassis.
10. Remove four Phillips head screws holding power supply chassis in cabinet. Remove chassis from cabinet.
11. Remove seven hex nuts holding speakers in cabinet. Remove speakers from cabinet.

Dial Stringing

Push the tuning elevator all the way down and string the dial as shown in Figure 1. Notice that the dial cord, in progressive steps 9, 10, 11 and 12 is made to travel behind the start and end of cord stringing. The procedure will be easier if pulley C is by-passed until the rest of the work is finished after which the cord can be pulled tight over that pulley. During the procedure, locate the two brass eyelets so that they fall between pulleys A and B. When finished, crimp the eyelets on the cord in the proper positions to act as minimum and maximum stops for the tuning mechanism. Insert pins through the cord and glue to prevent eyelets from moving. Clip the pointer on the cable halfway between the eyelets.

If the cord and spring are to be replaced, the Type 1 spring should be used. It fits the same drum and is an improved type. The Type 2 spring should be used with the later type of drum (with two tabs). When stringing the mechanism with either the Type 1 or Type 2 spring, load the spring by pulling the hook over the projection at the other end of the spring, string the dial and, as a final step, release the hook so that it pulls up the slack in the dial cord.

Concluding Comments

After replacing the dial cord or the elevator cord, it may be found that some correction in relative positioning is needed. This can be done by loosening the setscrews in the large drive pulley directly behind the dial scale and repositioning it on the shaft. The object, of course, is to permit the tuning control to drive the elevator through its full tuning range. Slight errors in final setting are not serious since leeway is provided in the location of the dial pointer itself.

Elevator Stringing

Start by inserting the metallic cord in slot as shown in Step 1. Observe that the cord is measured five inches from end of loop to where it enters the slot. Now bring the loop end around the pulley counterclockwise, as in Step 2. Next, thread loop through hole in elevator top plate, fastening it to the hoist cord tension spring, as viewed in Step 3. Steps 4, 5, 6 and 7 show how the free end of cord progresses on the pulley, going clockwise and that each turn is laid progressively one in back of the other and in back of the vertical section, going to the tension spring in tuner plate. In Step 6, pass the free end of cord down through the hole in chassis, grasping its end with long-nosed pliers and drawing tension on cord while running elevator completely down to the bottom. Keeping tension on cord and forcing large dial drive drum so that hoist cord spring is compressed, complete Step 7 making a one turn loop of the cord's free end around the lug shown on end of elevator shaft, and solder.

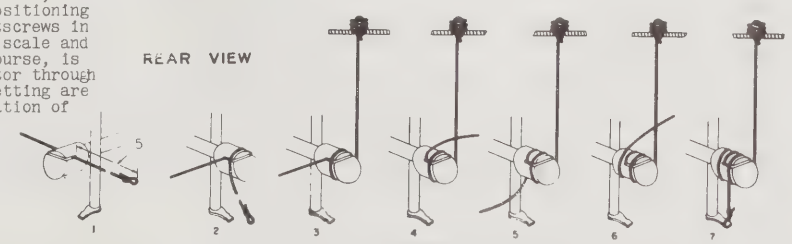
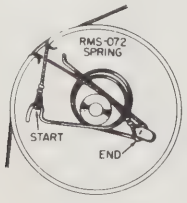
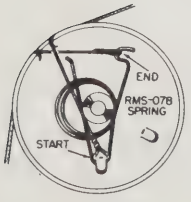


FIGURE 2
Elevator Windlass Stringing Procedure



1

REAR VIEWS



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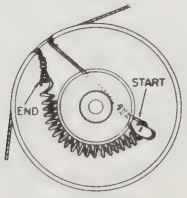


EARLY PROD.
3

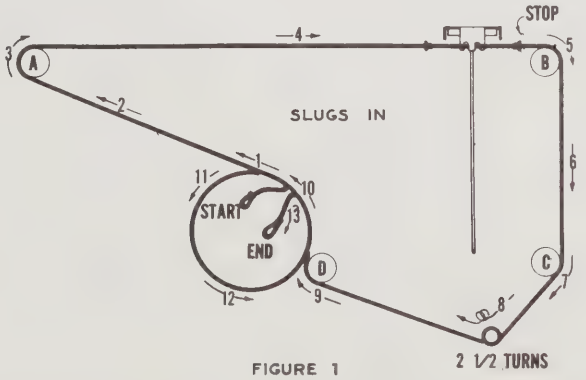


FIGURE 1

DIAL CORD DRIVES

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn pointer to extreme right hand position. Mark the position of right edge of pointer saddle. Use this reference mark in Steps below.

When connecting sig. gen. to converter grid a shielded lead must be used with not more than a 1/16" of bare lead exposed. Ground connection should be connected as close to high side as possible.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM IF ALIGNMENT

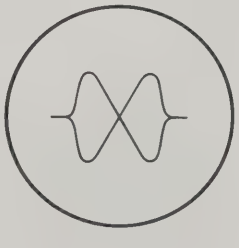
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	Direct	High side to Pin 1 (grid) 6AK5 converter tube (2). Low side to chassis.	455KC (400 modulation.)	Std. (2 positions clockwise)	Tuning slugs out completely.	Across voice coil	A1, A2, A3, A4, A5, A6.	Adjust for maximum output.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If VTVM is not available a 20,000Ω per volt DC voltmeter may be used as an output indicator. In Step 4 the 200KΩ resistor should be connected directly to the grid (preferable soldered) so that capacity loading will be negligible and so that meter is isolated from IF signal. Attenuate signal generator output to maintain a maximum meter reading of 1 volt.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
2	.01 MFD.	High side to Pin 2 (grid) 6SV7 FM Limiter Tube (6). Low side to chassis.	10.7MC (unmodulated)	FM 1 (fully counter clockwise)	Tuning slugs out completely.	DC probe to Point B. Common lead to chassis.	A7	Adjust for zero deflection.
3	.01 MFD.	"	Detune for maximum deflection.	"	"	"	A8	Adjust for maximum deflection.
4	.01 MFD.	High side to Pin 2 (grid) 6SV7 Tube (5). Low side to chassis.	10.7MC (unmodulated)	"	"	DC probe of VTVM in series with 200K Ω resistor to Pin 2 (grid) of 6SV7 Tube (6). Common lead to chassis	A9, A10	Adjust for maximum deflection with 6AQ7 tube removed from socket.
5	.01 MFD	High side to Pin 4 (grid) 6SG7. Low side to chassis.	"	"	"	"	A11, A12	"
6	Direct	High side to Pin 1 (grid) 6AK5 converter tube (2). Low side to chassis.	"	"	"	"	A13, A14	Adjust for maximum deflection with 6AQ7 tube removed from socket. Replace 6AQ7 tube.
7	Direct	Across dipole terminals	98MC	FM2 (one position clockwise)	Set right edge of pointer saddle 3-9/16 inch from reference mark at right end of dial backplate.	"	A15	Loosen A15 completely and adjust for first peak. Adjust for maximum deflection.
8	Direct	"	"	"	Tune for maximum deflection.	"	A16	Rock tuning control and adjust for maximum deflection.
9	Direct	"	"	"	Do not change from last Step.	"	A17	Adjust for maximum deflection.
10	Direct	"	46MC	FM 1 (fully counter clockwise)	Set right edge of dial pointer saddle 3-1/4" from reference mark at right end of dial backplate.	"	A18	Loosen A18 completely then adjust for maximum deflection on first peak.
11	Direct	"	"	"	Tune for maximum deflection.	"	A19	Rock tuning control and adjust for maximum deflection.
12	Direct	"	"	"	Do not change from last step.	"	A20	Adjust for maximum deflection.

PATTERN A



PATTERN B

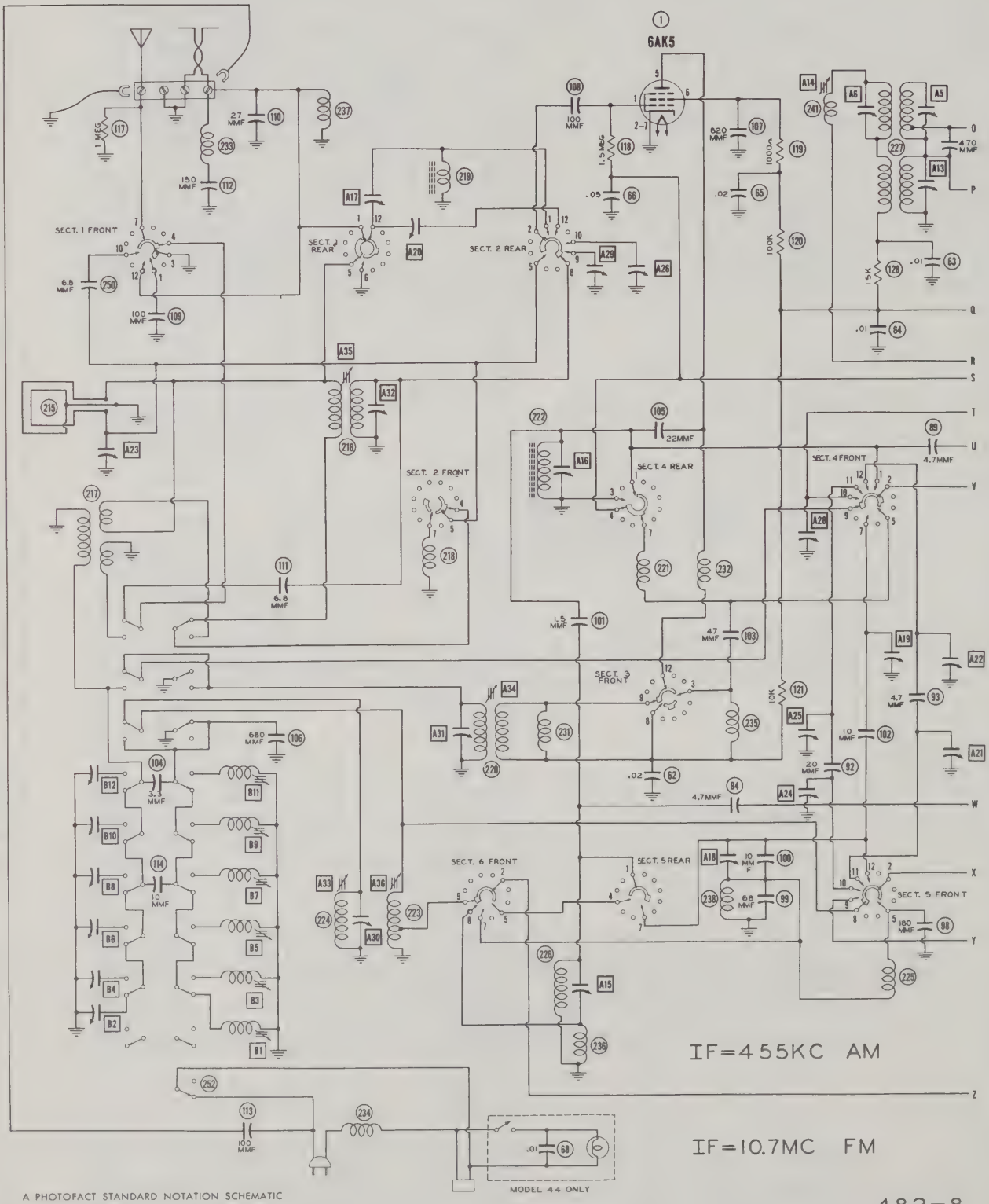
FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
2	.01 MFD	High side to Pin 1 (grid) 6AK5 converter tube (2). Low side to chassis.	10.7MC (Freq. Mod.)	FM 2 (1 position clockwise)	High freq. end of dial.	Vertical input to Point A. Ground to chassis.	A14,A13 A12,A11 A10,A9	Remove 6AQ7 Tube from socket. Adjust for symmetry, coincidence and maximum amplitude of Pattern A. (A10 is not in all receivers.)
3	.01 MFD	"	"	"	"	Vertical input to Point B. Ground to chassis.	A7,A8	Replace 6AQ7 tube. Adjust A7 & A8 alternately for maximum height and straightness of crossover lines with crossover occuring at center of pattern as in Pattern B.
4	Direct	Across dipole terminals.	98MC	"	Set right edge of pointer saddle 3-9/16 inch from reference mark at right end of dial.	Vertical input to Point A. Ground to chassis.	A15	Remove 6AQ7 tube from socket. Adjust for coincidence per Pattern A.
5	Direct	"	"	"	Tune for coincidence.	"	A16	Rock tuning control for coincidence and adjust A16 for maximum amplitude.
6	Direct	"	"	"	Do not change	"	A17	Adjust for max. amplitude.
7	Direct	"	46MC	FM 1 (fully counter clockwise)	Set right edge of pointer saddle 3-1/4" from reference mark at right end of dial.	"	A18	Adjust for coincidence.
8	Direct	"	"	"	Tune for coincidence.	"	A19	Rock tuning control for coincidence and adjust A19 for maximum amplitude.
9	Direct	"	"	"	Do not change.	"	A20	Adjust for maximum amplitude. Replace 6AQ7 tube. Continue with Step 13.

AM RF ALIGNMENT

Use a freq. modulated signal 450KC sweep with 60~ modulation. Use 120~ sawtooth voltage in scope for horizontal deflection plates.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13	400Ω carbon res.	High side to ext. ant. terminal. Low side to chassis.	15.2MC (400 modulation)	SW 3 (fully clockwise)	Set right edge of pointer saddle 3-3/4" from reference ma mark at right end of dial backplate.	Across voice coil	A21	Adjust for maximum output. Turn sig. gen. to approx. 16.1MC. If signal is not heard retune sig. gen. to 15.2MC and loosen A21 to the next peak. Adjust for maximum output and recheck for image.
14	"	"	"	"	Do not change	"	A22	Rock tuning control and adjust for maximum output
15	"	"	"	"	"	"	A23	Adjust for maximum output
16	"	"	11.8MC	SW 2 (2 positions clockwise)	Set right edge of pointer saddle 3-3/8" from reference mark at right edge of dial backplate.	"	A24	Adjust for maximum output. Tune sig. gen. to approx. 12.7MC. If signal is not heard retune sig. gen. to 11.8MC and loosen A24 to next peak. Adjust for maximum output and recheck for image.
17	"	"	"	"	Do not change.	"	A25	Rock tuning control and adjust for maximum output
18	"	"	"	"	"	"	A26	Adjust for maximum output
19	"	"	9.6MC	SW 1 (3 positions clockwise)	Set right edge of pointer saddle 4" from reference mark at right edge of dial backplate.	"	A27	Adjust for maximum output. Tune sig. gen. to approx. 10.5MC. If signal is not heard retune sig. gen. to 9.6MC and loosen A27 until next peak is obtained Adjust for maximum output and recheck for image.
20	"	"	"	"	Do not change.	"	A28	Rock tuning control and adjust for maximum output
21	"	"	"	"	"	"	A29	Adjust for maximum output
22	200MMFD	"	1620KC	STD (2 positions clockwise)	Dial pointer at extreme right end of dial backplate.	"	A30, A31, A32	" " " "
23	200MMFD	"	1500KC	"	Set right edge of pointer saddle 1-3/8" from reference mark at right end of dial backplate.	"	A33	" " " "
24	200MMFD	"	1000KC	"	Tune for maximum output.	"	A34	" " " "
25	200MMFD	"	"	"	Do not change.	"	A35	" " " "
26	200MMFD	"	580KC	"	Tune for maximum output.	"	A36	Rock tuning control and adjust for maximum output. Repeat Steps 22 through 26 until no further improvement can be made.



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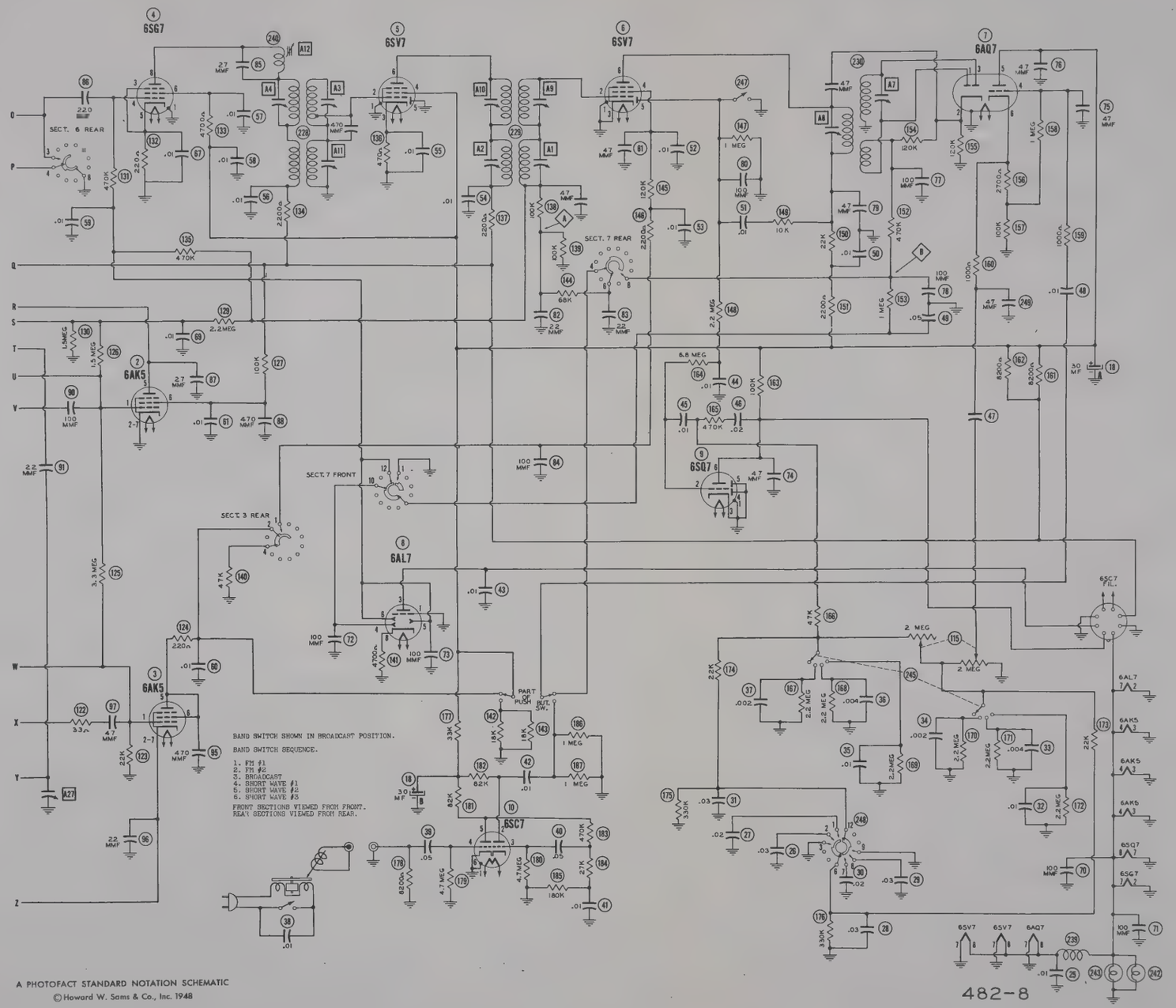

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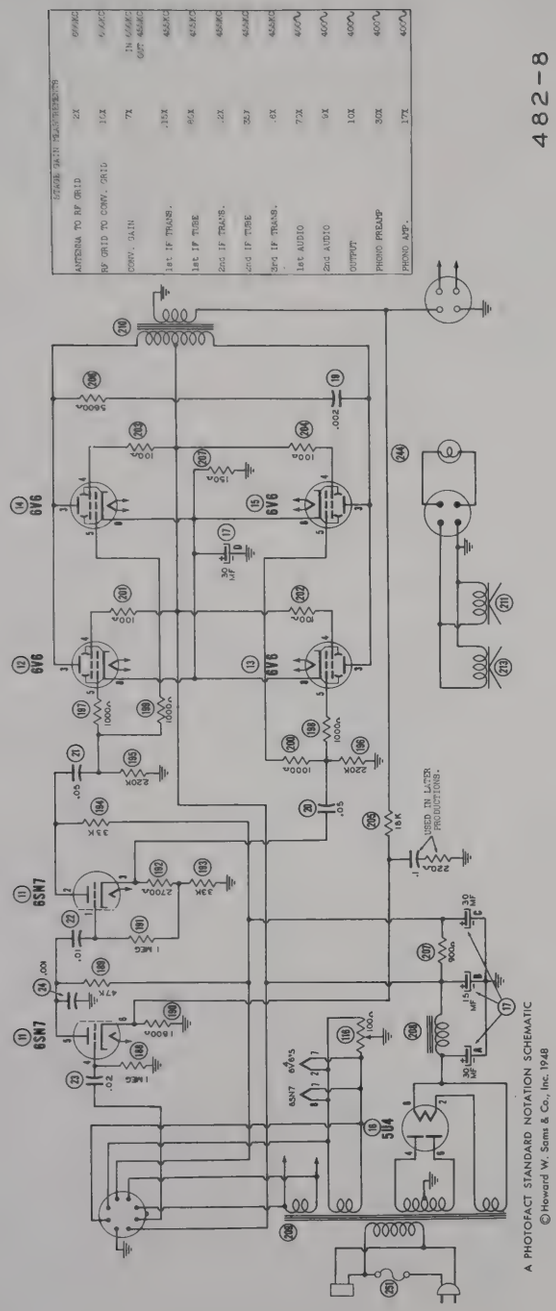

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482-8

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6AK5	-.2VDC	0V.	0V.	6.3VAC	240VDC	113VDC	0V.	-
2	6AK5	-1.1VDC	0V.	0V.	6.3VAC	228VDC	150VDC	0V.	-
3	6AK5	-2.2VDC§	0V.	0V.	6.3VAC	170VDC	170VDC	0V.	-
4	6SG7	0V.	0V.	5VDC	-.1VDC	5VDC	165VDC	6.3VAC	250VDC
5	6SV7	0V.	0V.	3VDC	170VDC	0V.	260VDC	0V.	6.3VAC
6	6SV7	0V.	-.6VDC	0V.	-.6VDC	0V.	170VDC	0V.	6.3VAC
‡ 6	6SV7	0V.	-.7VDC	0V.	3.1VDC	0V.	120VDC	0V.	6.3VAC
7	6AQ7GT	0V.	.8VDC	0V.	.6VDC	170VDC	60VDC	0V.	6.3VAC
9	6SQ7	0V.	-.3VDC	0V.	0V.	0V.	110VDC	0V.	6.3VAC
# 10	6SC7	0V.	78VDC	-.3VDC	-.3VDC	78VDC	0V.	3.2VAC	3.2VAC
11	6SN7GT	2.4VDC	205VDC	75VDC	0V.	185VDC	5.1VDC	3.2VAC	3.2VAC
12	6V6GT	0V.	3.2VAC	310VDC	315VDC	0V.	0V.	3.2VAC	20VDC
13	6V6GT	0V.	3.2VAC	310VDC	315VDC	0V.	0V.	3.2VAC	20VDC
14	6V6GT	0V.	3.2VAC	310VDC	315VDC	0V.	0V.	3.2VAC	20VDC
15	6V6GT	0V.	3.2VAC	310VDC	315VDC	0V.	0V.	3.2VAC	20VDC
16	5U4G	0V.	340VDC	0V.	305VAC	0V.	305VAC	0V.	340VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6AK5	2.5 Meg.	0Ω	0Ω	.1Ω	50KΩ	140KΩ	0Ω	-
2	6AK5	1.3 Meg.	0Ω	0Ω	.1Ω	55KΩ	150KΩ	0Ω	-
3	6AK5	22KΩ	.5Ω	0Ω	.1Ω	40KΩ	40KΩ	.5Ω	-
4	6SG7	0Ω	0Ω	250Ω	1 Meg.	250Ω	50KΩ	.1Ω	42KΩ
5	6SV7	0Ω	1.5Ω	500Ω	45KΩ	0Ω	42KΩ	0Ω	.1Ω
6	6SV7	0Ω	200KΩ	0Ω	INF.	0Ω	70KΩ	0Ω	.1Ω
‡ 6	6SV7	0Ω	200KΩ	0Ω	170KΩ	0Ω	70KΩ	0Ω	.1Ω
7	6AQ7GT	250KΩ	120KΩ	1Ω	1.1 Meg.	45KΩ	100KΩ	0Ω	.1Ω
9	6SQ7	0Ω	10 Meg.	0Ω	0Ω	0Ω	150KΩ	0Ω	.1Ω
# 10	6SC7	0Ω	120KΩ	5 Meg.	5 Meg.	120KΩ	0Ω	25Ω	25Ω
11	6SN7GT	1 Meg.	75KΩ	35KΩ	1 Meg.	90KΩ	1.8KΩ	25Ω	25Ω
12	6V6GT	0Ω	25Ω	40KΩ	40KΩ	250KΩ	250KΩ	25Ω	150Ω
13	6V6GT	0Ω	25Ω	40KΩ	40KΩ	250KΩ	250KΩ	25Ω	150Ω
14	6V6GT	0Ω	25Ω	40KΩ	40KΩ	250KΩ	250KΩ	25Ω	150Ω
15	6V6GT	0Ω	25Ω	40KΩ	40KΩ	250KΩ	250KΩ	25Ω	150Ω
16	5U4G	INF.	40KΩ	INF.	28Ω	INF.	27Ω	INF.	40KΩ

#VOLTAGE AND RESISTANCE READINGS TAKEN IN PHONO POSITION.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

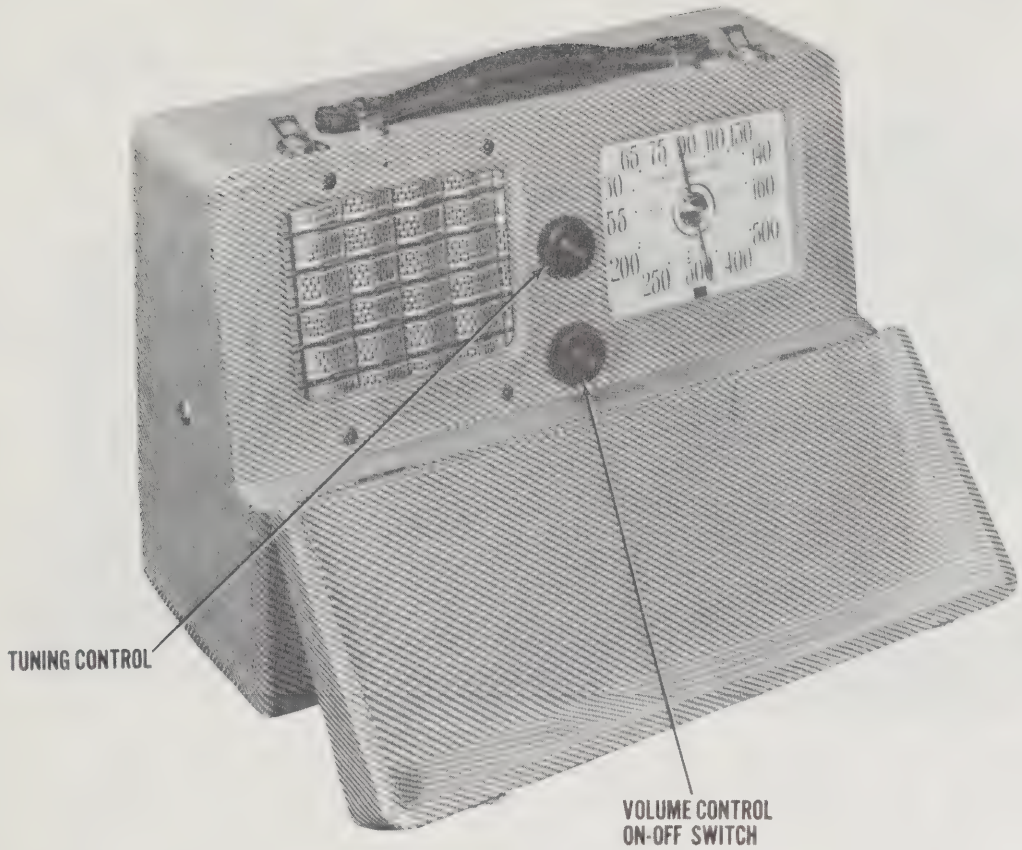
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

GEN. ELECT. MODEL 254
BATTERY-LINE OPERATED

GEN. ELECT. MODEL 254
BATTERY-LINE OPERATED



GEN. ELECT. MODEL 254
BATTERY-LINE OPERATED

GENERAL ELECTRIC MODEL 254

TRADE NAME	General Electric, Model 254
MANUFACTURER	General Electric Co., Appl. & Merch. Dept., Bridgeport, Conn.
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Ant.
TUBES (SIX)	Types, 1N5GT RF Amp., 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output, 117Z6GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply
RATING	.19 Amp. @ 117 Volts AC or 57MA @ 9 Volts DC and 11MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to grid cap. 1N5. IF Tube (3). Low side to B-.	455KC	Tuning cap. fully closed.	Across voice coil	A1,A2	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2	.05 MFD.	High side to grid cap. 1A7. Low side to B-.	"	"	"	A3,A4	Adjust for maximum output. Repeat Steps 1 & 2 until no further improvement can be made.
3		Loop	1620KC	Tuning cap. fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	1500KC	Tune for maximum output.	"	A6,A7	Adjust for maximum output.
5		"	600KC	"	"	A8	Adjust for maximum output. Repeat Steps 4 & 5 until no further improvement can be made.

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DATE 1/48 SET #32 FOLDER #482-9

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GEN. ELECT. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1N5GT	1N5GT	5Y	
2	Converter	1A7GT	1A7GT	7Z	
3	IF Amp.	1N5GT	1N5GT	5Y	
4	Det.-AVC-AF	1H5GT	1H5GT	5Z	
5	Power Output	3Q5GT	3Q5GT	7AP	
6	Rectifier	117Z6GT	117Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GEN. ELECT. PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	SCE-021	DY-3x40-150	EL-340	AF68D	UP44415	■ Filter
B	40	150		"		PRS150-40		▲ "
C	40	150						Filament Bypass
8A	40	150	SCE-020	DY-4020-150		AF844D	UP4215	■ Filter
B	20	150						▲ Filament Bypass
C	100	50		M-100-50		PRS50-50	BRH501	" "
9	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	Line Filter
10	.006	600		S-6-006	TC-26	684-006	DT6D6	Output Plate Bypass
11	.02	600	UCC-041	S-6-02	TC-12	684-02	DT6S2	Audio Coupling
12	.005	600	UCC-039	S-6-005	TC-25	684-005	DT6D5	" "
13	.001	600	UCC-018	S-6-001	TC-21	684-001	DT6D1	Tone Compensation
14	.01	600	UCC-025	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
15	.01	600	UCC-025	S-6-01	TC-11	684-01	DT6S1	IF Grid Filter
16	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	Filament Bypass
17	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	AVC Filter
18	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	Conv. Screen Bypass
19	.1	400	UCC-030	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
20	.1	600	UCC-030	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Power Supp.
21	.01	600	UCC-025	S-6-01	TC-11	684-01	DT6S1	AVC Filter
22	.02	400	UCC-041	S-4-02	TC-12	484-02	DT4S2	Filament Bypass
23	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	AVC Filter
24	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	" "
25	100	500	UCU-1028	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
26	56	500	UCU-1022	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
27	270	500	UCU-1038	MO.5-325	1FM-325	1468-00025	5W5T25	RF Coupling
28	10	500	UCU-1004	MO.5-41	1FM-41	1468-00001	5W5Q1	" "

CONTROLS

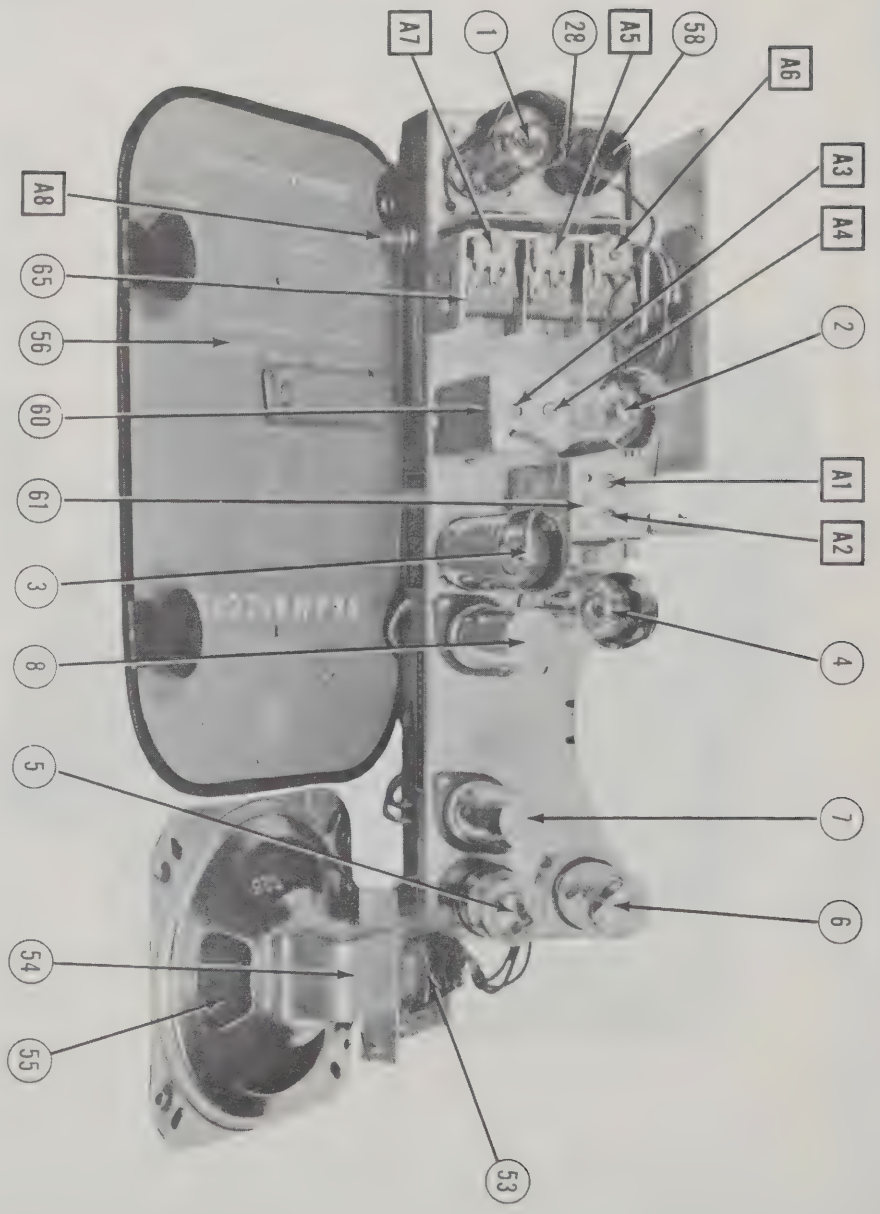
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELECT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
29A	1 Meg.	½	SRC-044	D13-137#	AM-63-Z#	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 29A per instructions
C	Switch		" "	42	SW-A2	" " " " "

#Use original bushing to actuate off-on indicator.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELECT. PART No.	IRC PART No.	IDENTIFICATION CODES
30	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. RF Grid
31	4.7 Meg.	½	URD-137	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
32	4.7 Meg.	½	URD-137	BTS-4.7 Meg.	Yl.-Vi.-Grn. " "
33	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. " "
34	220KΩ	½	URD-105	BTS-220K	Red-Red-Yl. Line Isolation
35	2200Ω	½	URD-057	BTS-2200	Red-Red-Red Filament String
36	220KΩ	½	URD-105	BTS-220K	Red-Red-Yl. Oscillator Grid
37	68KΩ	½	URD-093	BTS-68K	Blue-Gray-Or. Converter Screen Dropping
38	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn. IF Grid
39	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red Filament String
40	560KΩ	½		BTS-560K	Grn.-Blue-Yl. Diode Load
41	10 Meg.	½	URD-145	BTS-10 Meg.	Br.-Blk.-Blue AVC Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GEN. ELECT. PART No.	IRC PART No.	
42	15 Meg.	½	URD-149	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
43	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
44	150KΩ	½	URD-101	BTS-150K	Br.-Grn.-Yl. Tone Compensation
45	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
46	270Ω	1	URD-035	BW-1-270	Red-Vi.-Br. Filament String
47	510Ω	1	URD-1042		Grn.-Br.-Br. " " " ± 5%
48A	950Ω	5	SRW-024		Filament Dropping
B	950Ω				" "
49	12KΩ	2	URF-075	BT-2-12K	Br.-Red-Or. Bleeder
50	220Ω	1	URD-033	BW-1-220	Red-Red-Br. Filter
51	340Ω	5	SRW-026	AB-350	"
52	39Ω	5	SRW-025	AB-50	Rectifier Ballast - See Note

Note-On IRC replacement set slider at 39Ω from one end.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GEN. ELECT. PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
53	6700Ω	3.6Ω	340Ω	.3Ω	STO-007	A-3823	T22S87	A-2901	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GEN. ELECT. PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-108		
54	PM	3.6Ω	UOP-546	Mod. P6-X		
	CONE DIA.	VC DIA.				
55	5¼"	1/2"	UOX-008			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	GEN. ELECT. PART No.	MEISSNER PART No.	
56	Loop Ant.		1.2Ω	SLL003		
57	Ant. Load. Coil		2.5Ω	SLA002		
58	RF Coil	100Ω	7Ω	SLB002		
59	Osc. Coil	6.5Ω	4.5Ω	SLC011		
60	Input IF	12Ω	12Ω	STL-009	16-6658	
61	Output IF	12.8Ω		STL-010	16-6670	

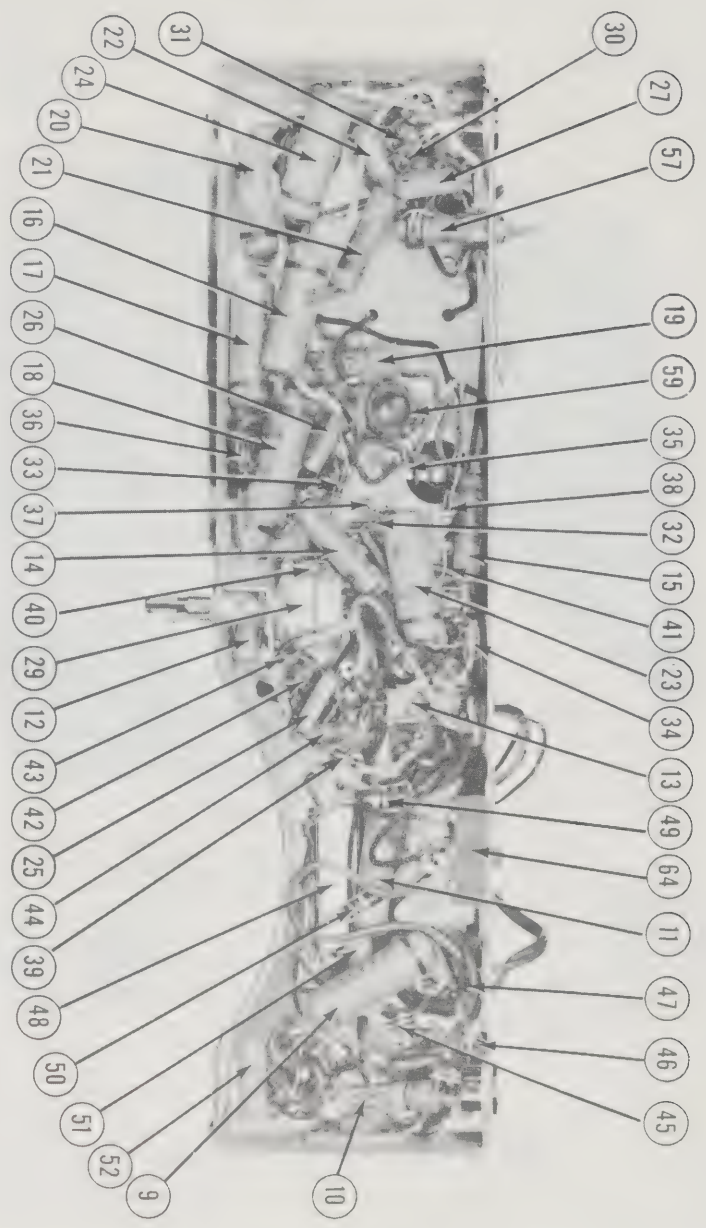
BATTERIES

ITEM No.	VOLTAGE	GEN. ELECT. PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
62	9V "A"		#746			2 Used in series
63	90V "B"			#482		" " " "

MISCELLANEOUS

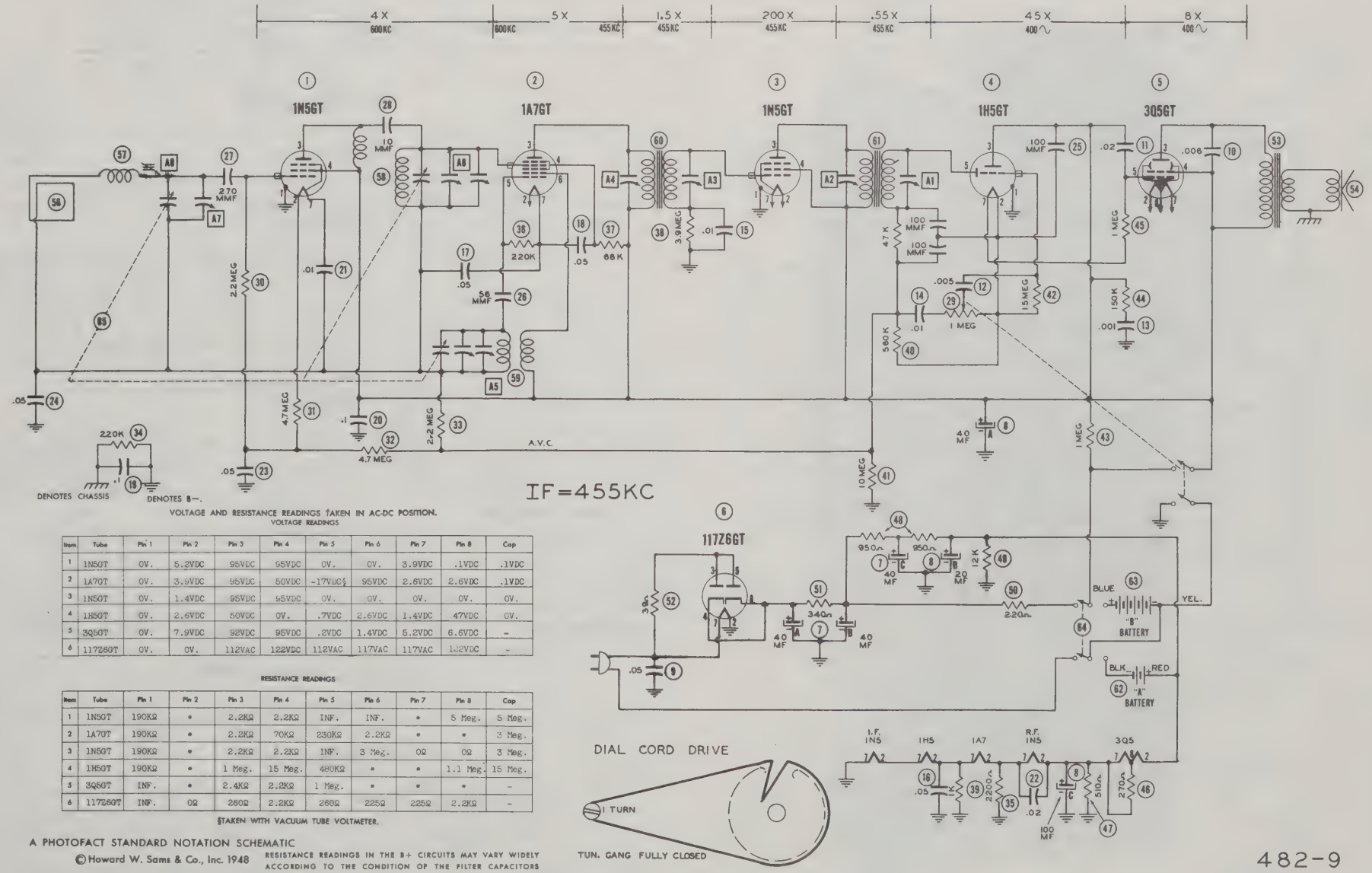
ITEM No.	PART NAME	GEN. ELECT. PART No.	NOTES
64	Switch	SSS-009	AC-DC-Batt.
65	3 Gang Var. Cap.	SCT-010	(53-491 MMF, 41-205MMF, 53-491 MMF)
	Knob	SDK-036	Control
	Dial Pointer	SDP-003	
	Dial Scale	SDS-012	

CHASSIS—BOTTOM VIEW



GENERAL ELECTRIC MODEL 254
BATTERY-LINE OPERATED

GENERAL ELECTRIC MODEL 254
BATTERY-LINE OPERATED



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1N5GT	0V.	5.2VDC	95VDC	95VDC	0V.	0V.	3.9VDC	.1VDC	.1VDC
2	1A7GT	0V.	3.9VDC	95VDC	50VDC	-17VDC§	95VDC	2.6VDC	2.6VDC	.1VDC
3	1N5GT	0V.	1.4VDC	95VDC	95VDC	0V.	0V.	0V.	0V.	0V.
4	1H5GT	0V.	2.6VDC	50VDC	0V.	.7VDC	2.6VDC	1.4VDC	47VDC	0V.
5	3Q5GT	0V.	7.9VDC	92VDC	95VDC	.2VDC	1.4VDC	5.2VDC	6.6VDC	-
6	117Z6GT	0V.	0V.	112VAC	122VDC	112VAC	117VAC	117VAC	122VDC	-

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1N5GT	190KΩ	•	2.2KΩ	2.2KΩ	INF.	INF.	•	5 Meg.	5 Meg.
2	1A7GT	190KΩ	•	2.2KΩ	70KΩ	230KΩ	2.2KΩ	•	•	3 Meg.
3	1N5GT	190KΩ	•	2.2KΩ	2.2KΩ	INF.	3 Meg.	0Ω	0Ω	3 Meg.
4	1H5GT	190KΩ	•	1 Meg.	15 Meg.	480KΩ	•	•	1.1 Meg.	15 Meg.
5	3Q5GT	INF.	•	2.4KΩ	2.2KΩ	1 Meg.	•	•	•	-
6	117Z6GT	INF.	0Ω	260Ω	2.2KΩ	260Ω	225Ω	225Ω	2.2KΩ	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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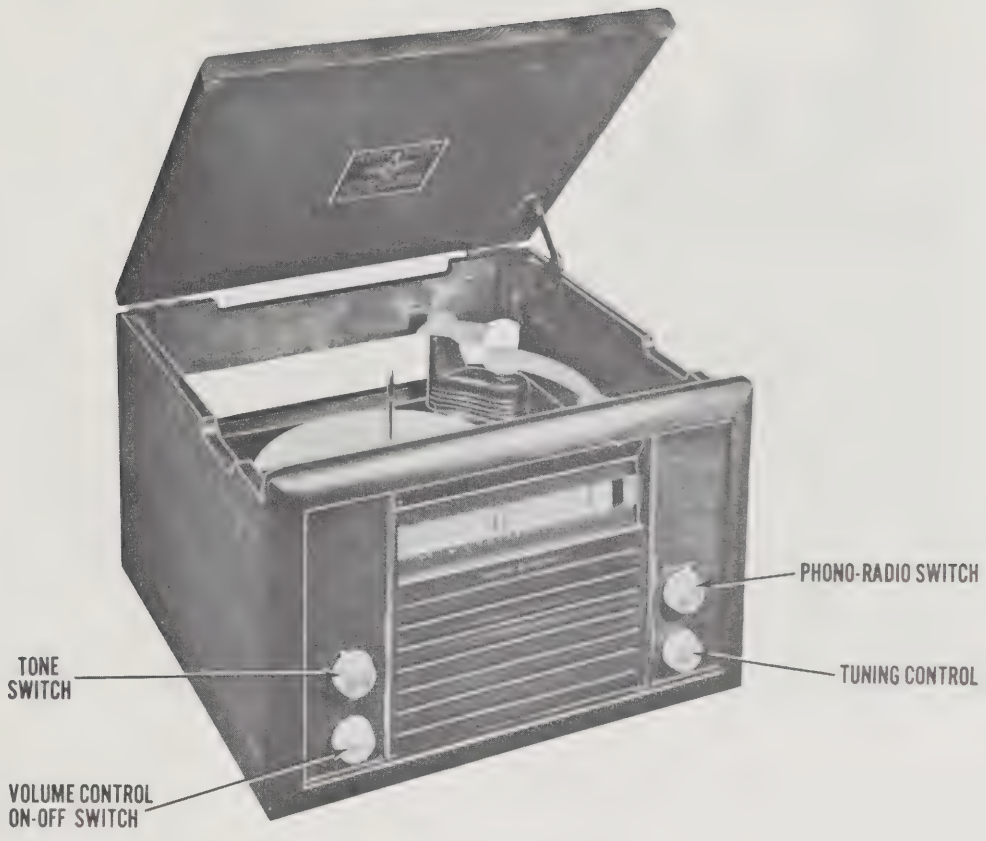
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

482-9

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to Pin #2 of 1H7.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

GENERAL ELECTRIC MODEL 304



GENERAL ELECTRIC MODEL 304

GENERAL ELECTRIC MODEL 304

TRADE NAME	General Electric, Model 304
MANUFACTURER	General Electric Co., Appl. & Merch. Dept., Bridgeport, Conn.
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6SC7 Phono Pre-Amp., 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING .57 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Before attempting alignment turn tuning cap. fully closed and mark position of pointer in relation to dial backplate. This mark is index mark referred to in Step 3. After receiver has been installed in cabinet turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to Pin 4 (grid) 6SK7. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil (voice coil socket on bottom of chassis.)	A1,A2	Adjust for maximum output.
2	.05 MFD.	High side to Pin 8 (grid) 6SA7. Low side to chassis.	"	"	Across voice coil	A3,A4, A1,A2.	" " " "
3	200MMFD	High side to terminal "A" of ant. terminal strip. Low side to chassis.	1500KC	5-11/16" from index mark.	"	A5	Adjust for maximum output. Trimmer opposite A5 is a factory adjustment and normally need not be adjusted.
4	200MMFD	"	"	Tune for maximum output.	"	A6	Adjust for maximum output. Repeat Steps 3 & 4 until no further improvement can be made.

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DATE 1/48 SET #32 FOLDER #482-10

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GEN. ELECT. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6SA7	6SA7	8R	
2	IF Amp.	6SK7	6SK7	8N	
3	Det.-AVC-AF	6SQ7	6SQ7	8Q	
4	Phono Pre-Amp.	6SC7	6SC7	8S	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GEN. ELECT PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	350	RCT-020	DY-403	EL-424	AF862J4A	UP43145C	◓ Filter
B	30	350						■ "
C	15	450						▲ "
D	20	25						Cathode Bypass
8	.003	1000	UCC-057	TM-16-003	TR-23	1084-003	MD16D3	Output Plate Bypass
9	.02	600	UCC-041	S-6-02	TC-12	684-02	DT6S2	Audio Coupling
10	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	" "
11	.007	600	RCC-001	S-6-006	TC-26	684-0075	DT6D6	Tone Comp.
12	.005	600	UCC-039	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
13	.001	600	UCC-035	S-6-001	TC-21	684-001	DT6D1	Tone Comp.
14	.001	600	UCC-035	S-6-001	TC-21	684-001	DT6D1	" "
15	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	Audio Coupling
16	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	" "
17	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	Tone Comp.
18	.02	600	UCC-041	S-6-02	TC-12	684-02	DT6S2	IF Plate Decoup.
19	.05	600	UCC-045	S-6-05	TC-15	684-05	DT6S5	AVC Filter
20	.01	600	UCC-040	S-6-01	TC-11	684-01	DT6S1	Conv. Screen Bypass
21	470		UCU-044	MO.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass
22	47		UCU-020	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.

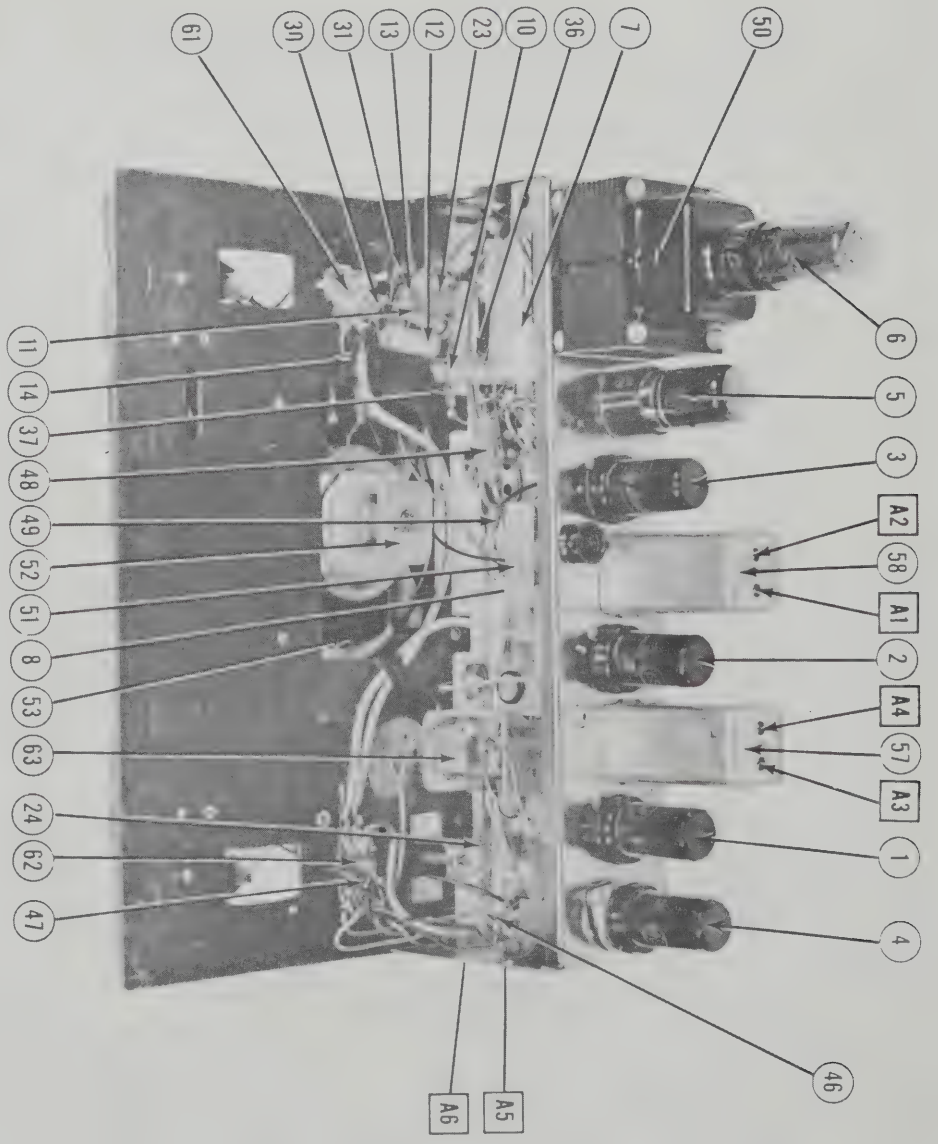
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELECT. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	2 Meg.	½	RRC-029	D18-139X	AT-116	Volume Control tapped @ 1 Meg.
B	Shaft		Not Req.	E	KSS-3	Attach to 23A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELECT. PART No.	IRC PART No.	IDENTIFICATION CODES
24	470Ω	½	URD-041	BTS-470	Yl.-Vi.-Br. Series Antenna
25	22KΩ	½	URD-081	BTS-22K	Red-Red-Or. Oscillator Grid
26	470Ω	½	URD-041	BTS-470	Yl.-Vi.-Br. Converter Screen Decoupling
27	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
28	2200Ω	½	URD-057	BTS-2200	Red-Red-Red IF Plate Decoupling
29	220KΩ	½	URD-105	BTS-220K	Red-Red-Yl. Diode Load
30	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Tone Compensation
31	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. " "
32	10 Meg.	½	URD-145	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
33	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
34	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl. Output Grid
35	330Ω	1	URE-037	BW-1-330	Or.-Or.-Br. Output Cathode
36	1500Ω	½	URD-053	BTS-1500	Br.-Grn.-Red Feedback
37	100Ω	½	URD-025	BW-½-100	Br.-Blk.-Br. Feedback
38	2200Ω	2	URF-057	BT-2-2200	Red-Red-Red Filter
39	2200Ω	½	URD-057	BTS-2200	Red-Red-Red Phono Shunt
40	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn. 1st Phono Amp. Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GEN. ELECT. PART No.	IRC PART No.	
41	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn. 2nd Phono Amp. Grid
42	68KΩ	½	URD-093	BTS-68K	Blue-Gray-Or. 1st Phono Amp. Plate Load
43	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. 2nd Phono Amp. Plate Load
44	330KΩ	½	URD-109	BTS-330K	Or.-Or.-Yl. Tone Compensation
45	27KΩ	½	URD-083	BTS-27K	Red-Vi.-Or. Tone Compensation
46	180KΩ	½	URD-103	BTS-180K	Br.-Gray-Yl. Tone Compensation
47	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Phono Amp. Decoupling
48	12KΩ	2	URF-075	BT-2-12K	Br.-Red-Or. Voltage Dropping
49	5600Ω	½	URD-067	BTS-5600	Grn.-Blue-Red Tone Compensation.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	GEN. ELECT. PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
50	117V AC @ .57A	560V CT @ .056A	6.3V AC @ 1.2A	6.3V AC @ 1.4A	PTP-021	P-6119*		

*Mount rectifier socket on transformer and run leads thru chassis.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GEN. ELECT. PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
51	6800Ω	3.5Ω	400Ω	.55Ω	RTO-013	A-3875†	T22S471	A-2501	†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GEN. ELECT. PART No.	JENSEN PART No.		
52	FIELD PM	VC IMP. 3.5Ω	UOP-628	ST-108 Mod. P6-X		
53	CONE DIA. 6"	VC DIA. 5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	GEN. ELECT. PART No.	MEISSNER PART No.
54	Loop Ant.	.1Ω	1Ω	RLL-014	
55	Ant. Load. Coil		.8Ω	RLA-021	
56	Osc. Coil		8Ω	RLC-021	14-1040
57	Input IF	16Ω	16.5Ω	RTL-021	16-6658
58	Output IF	16.5Ω		RTL-020	16-6670

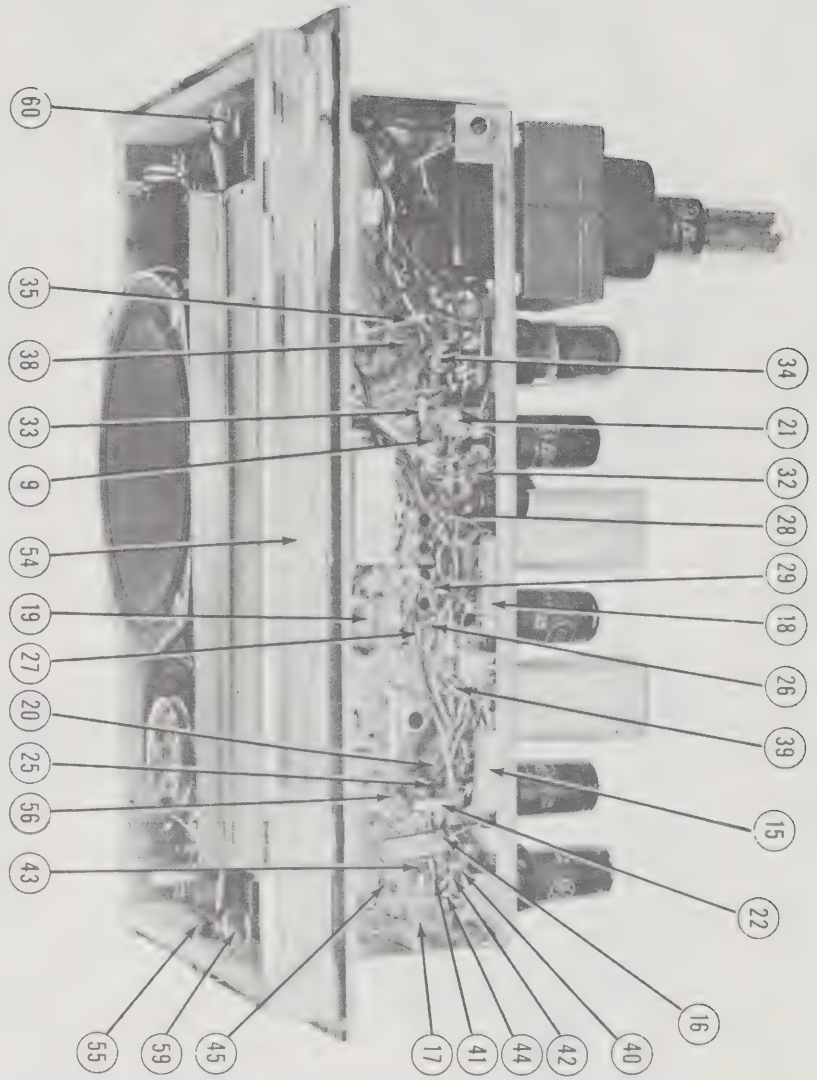
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					GEN. ELECT. PART No.		
59	Bayonet	6-8	0.15	Brown	UDL-008		Type 47
60	"	"	"	"	UDL-008		" "

MISCELLANEOUS

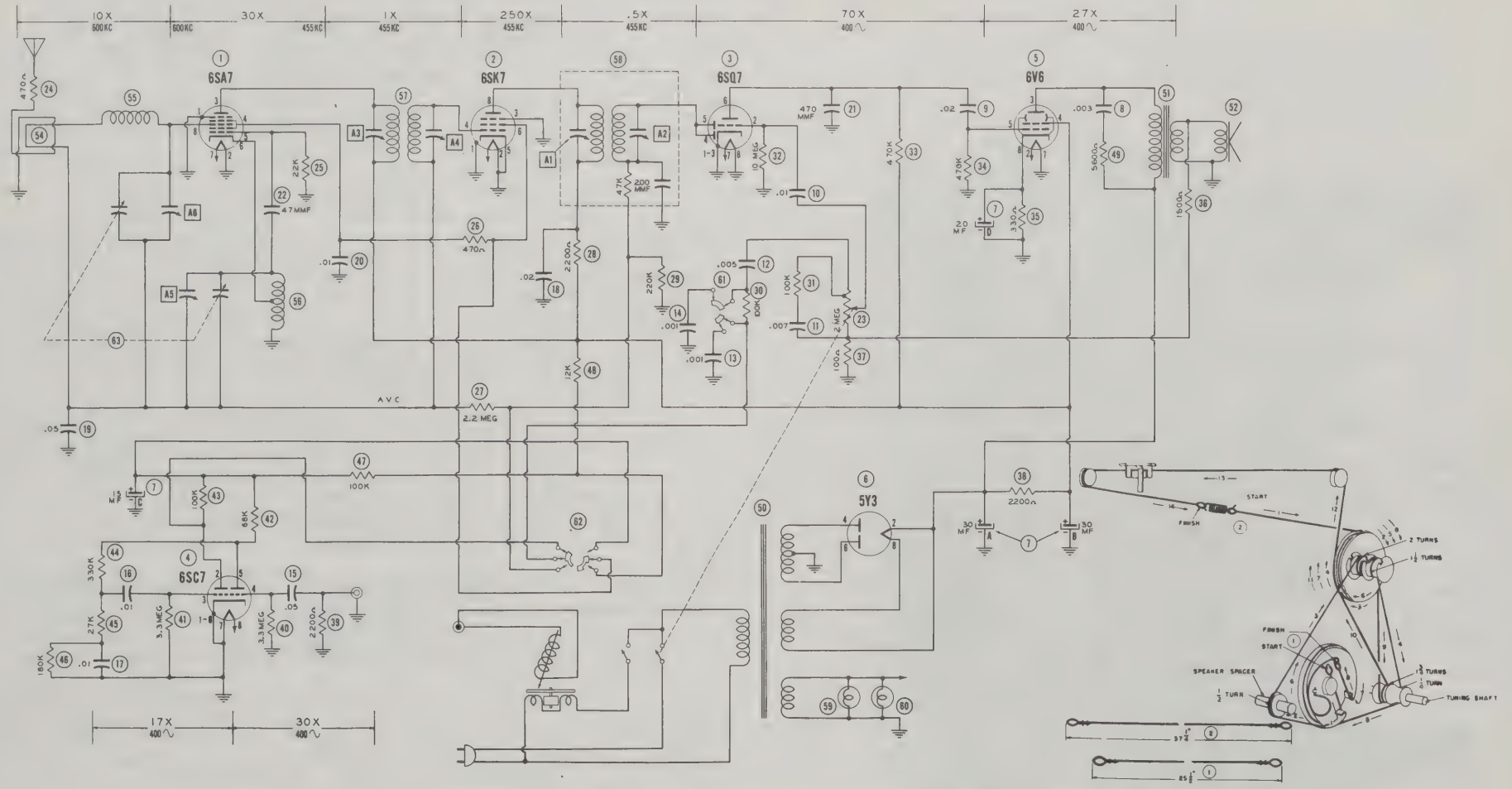
ITEM No.	PART NAME	GEN. ELECT. PART No.	NOTES
61	Switch	RSW-019	Tone
62	"	RSW-018	Radio-Phono
63	2 Gang Var. Cap	RCT-020	(20-530MMF, 24-304MMF)
	Pointer	RDP-014	Pointer and Slide Assy.
	Dial	RDS-049	Scale and Cushion

CHASSIS—BOTTOM VIEW



DATE 1/48
SET #32
FOLDER #492-10

GEN. ELECT.
MODEL 304



IF=455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0V.	0V.	210VDC	87VDC	-8VDC§	0V.	6.3VAC	-.25VDC
2	6SK7	0V.	0V.	0V.	-.25VDC	0V.	90VDC	6.3VAC	185VDC
3	6SQ7	0V.	-.5VDC	0V.	-.5VDC	-.5VDC	80VDC	6.3VAC	0V.
4	6SC7	0V.	65VDC	-.35VDC	-.35VDC	65VDC	0V.	0V.	6.3VAC
5	6V6	0V.	6.3VAC	265VDC	200VDC	0V.	265VDC	0V.	1[illegible]5VDC
6	5Y3	0V.	265VDC	0V.	280VAC	0V.	280VAC	0V.	265VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0Ω	0Ω	45KΩ	57KΩ	21KΩ	.6Ω	.1Ω	2 Meg.
2	6SK7	0Ω	0Ω	0Ω	2 Meg.	0Ω	57KΩ	.1Ω	47KΩ
3	6SQ7	0Ω	1[illegible] Meg.	0Ω	280KΩ	280KΩ	525KΩ	.1Ω	0Ω
4	6SC7	0Ω	240KΩ	3.5 Meg.	3.5 Meg.	220KΩ	0Ω	0Ω	.1Ω
5	6V6	0Ω	.1Ω	45KΩ	47KΩ	500KΩ	45KΩ	0Ω	330Ω
6	5Y3GT	INF.	45KΩ	INF.	210Ω	INF.	220Ω	INF.	45KΩ

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

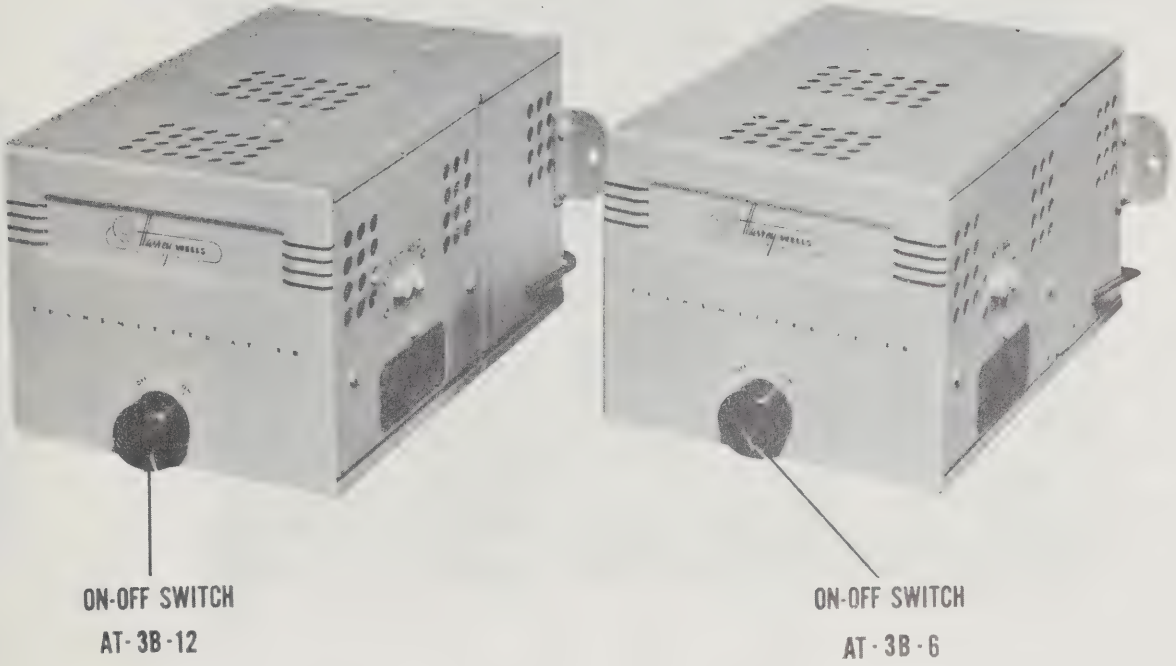
482-10

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HARVEY-WELLS MODELS AT-3B-6, AT-3B-12

HARVEY-WELLS MODELS
AT-3B-6, AT-3B-12



HARVEY-WELLS MODELS
AT-3B-6, AT-3B-12

TRADE NAME	Harvey-Wells, Models AT-3B-6, AT-3B-12
MANUFACTURER	Harvey-Wells Electronics, Inc., Southbridge, Mass.
TYPE SET	Battery Operated Aircraft Transmitter
TUBES (FOUR)	Types, 7C5 Oscillator, 7C5 RF Power Amp., (2) 7C5 Modulator
POWER SUPPLY RATING	6 Volt Battery for AT-3B-6 or 12 Volt Battery for AT-3B-12 (AT-3B-6) 10.6 Amp. @ 6 Volts DC or (AT-3B-12) 4.5 Amp. @ 12 Volts DC
TRANSMITTER FREQUENCY	3105KC

ADJUSTMENT AFTER INSTALLATION

1. Place thermo-ammeter (1 Amp. movement) in series between load coil and transmitter antenna terminal.
2. Plug 1 MA milliameter in to "plate I" jack. Depress "push-to-talk" during all the following adjustments.
3. Select tap on load coil which gives greatest reading on thermo-ammeter (approx. 2/3 to full scale).
4. Rotate core adjustment on antenna load coil for maximum reading on thermo-ammeter.
5. Adjust A1 for approximately 2/3 full scale deflection of milliameter.
6. Adjust A2 for minimum reading on milliameter. Repeat Steps 4, 5 & 6.
7. Adjustment is complete when load coil is adjusted for maximum antenna current, A1 is adjusted for appox. 2/3 scale deflection on milliameter and A2 is adjusted for minimum deflection on milliameter.

HOWARD W. SAMS & CO., INC. **Indianapolis 6, Indiana**

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DATE 1/48 SET #32 FOLDER #482-11

PARTS LIST AND DESCRIPTIONS

HARVEY-WELLS MODELS AT-3B-6, AT-3B-12

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HARVEY-WELLS PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Oscillator	7C5	7C5	6AA	
2	PA Power Amp.	7C5	7C5	6AA	
3	Modulator	7C5	7C5	6AA	
4	"	7C5	7C5	6AA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HARVEY-WELLS PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	20	450				AF4J		■ Filter
B	10	50	A-7726			PRSA50-10-10		▲ Mod. Cathode Bypass Mic. Supply Filter
C	10	50						
6	1	120	A-73-107-BCB1P0M					Hash Filter
7	1	120	A-73-107-BCB1P0M					" "
8	.1	600	A-74-100-CC15M	S-6-1	TC-1	684-.1	DT6P1	" "
9	.01	1600	A-73-108-BCC14SK	TM-16-01	TR-11	1684-01	MD16S1	Buffer
10	75	500	A-30-025-FC7S0		1FM-475	1468-000075		Crystal Osc. Grid
11	500	500	A-30-025-FC52	MO.5-35	1FM-35	1468-0005	5W5T5	Osc. Coupling
12	500	500	A-30-025-FC52	MO.5-35	1FM-35	1468-0005	5W5T5	Power Amp. Screen Byp.
13	1000	500	A-30-045-FC13	MW.5-21	1FM-21	1468-001	1W5D1	RF Filter
14	130	500	A-31-034-FC131					Fixed Tank Trimmer

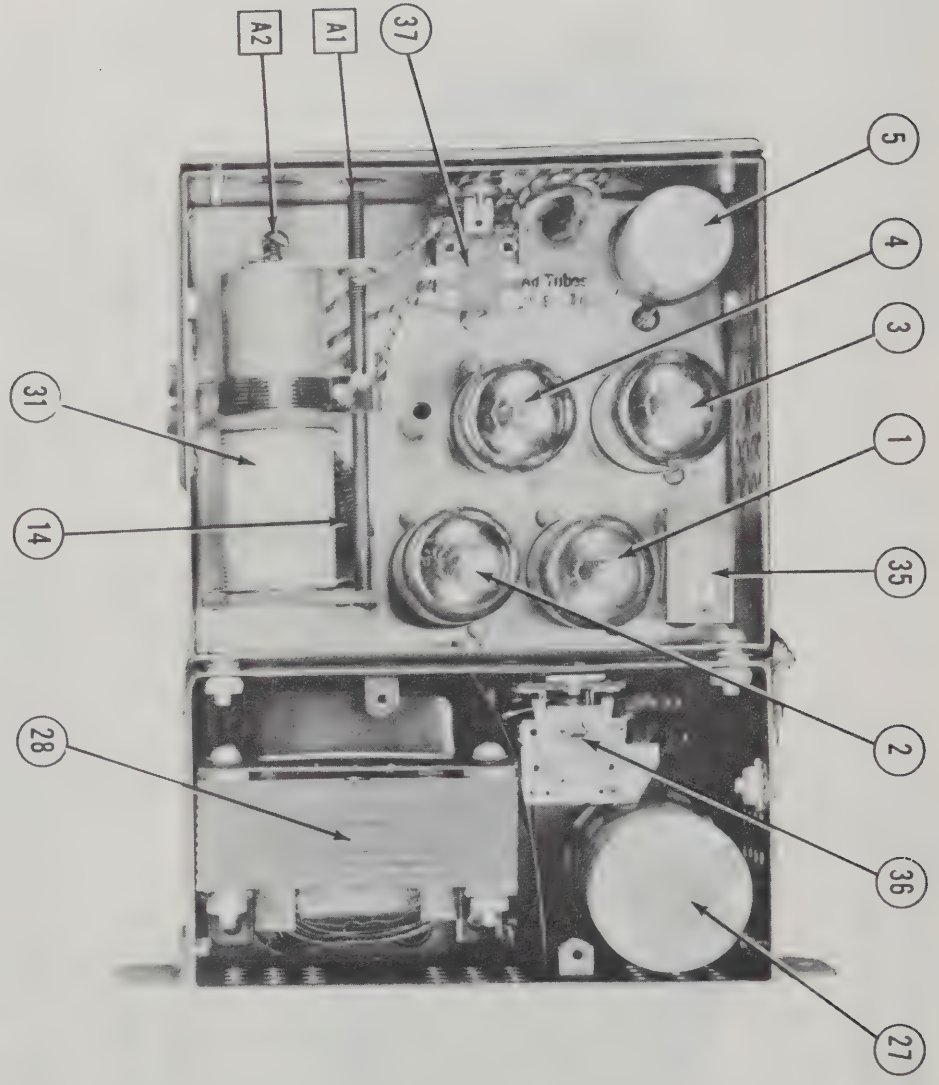
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HARVEY-WELLS PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
15	47KΩ	½	A-81-013-473K	BTS-47K	Yl.-Vl.-Or. Crystal Oscillator Grid
16	24KΩ	2	A-81-039-243K	BT-2-22K	Red-Yl.-Or. Crystal Oscillator Plate Load
17	27KΩ	½	A-81-013-27K	BTS-27K	Red-Vl.-Or. Power Amplifier Grid
18	51Ω	½	A-81-013-51K	BW-½-47	Grn.-Br.-Blk. Power Amplifier Grid Bias
19	5100Ω	½	A-81-013-512K	BTS-4700	Grn.-Br.-Red Meter Multiplier
20	51Ω	½	A-81-013-51K	BW-½-47	Grn.-Br.-Blk. Power Amplifier Cathode
21	5100Ω	1	A-81-016-512K	BTA-4700	Grn.-Br.-Red Power Amplifier Screen Dropping
22	300Ω	2	A-81-038-32K	BW-2-330	Or.-Blk.-Br. Modulator Cathode
23	2000Ω	½	A-81-013-23K	BTS-2200	Red-Blk.-Red Microphone Voltage Divider
24	15Ω	3	A-7644-5	BW-2-15	Br.-Grn.-Blk. Series Antenna Relay
25	10KΩ	½	A-81-020-14K	BTS-10K	Br.-Blk.-Or. Hash Suppression
26	.1Ω		A-7795-1		Voltage Dropping

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: HARVEY-WELLS PART No.	REPLACEMENT DATA: RADIART PART No.	INSTALLATION NOTES
27A	Synchronous	6V.	100~	A-7627-1		Used in Model AT-3B-6
B	"	12V.	100~	A-7627-2		" " " AT-3B-12

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	HARVEY-WELLS PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
28A	6.3V DC @ 7.3A	1000VCT @ .115A						
B	12.5VDC @ 3.5A	820V CT @ .100A						

TRANSFORMER (MICROPHONE)

ITEM No.	RATING			REPLACEMENT DATA				INSTALLATION NOTES
	TURNS RATIO	DC RES.		HARVEY-WELLS PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI. to SEC.	PRI.	SEC.					
29	1 to 14	8.6Ω	2500Ω CT	A-7725		T20A00*		*Drill one new mounting hole.

TRANSFORMER (OUTPUT)

ITEM No.	RATING			REPLACEMENT DATA				INSTALLATION NOTES
	TURNS RATIO	DC RES.		HARVEY-WELLS PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI. to SEC.	PRI.	SEC.					
30	SEC. #1 1.6 to 1	250Ω CT	#1 160Ω	A-7616				
	SEC. #2 25 to 1		#2 .3Ω					

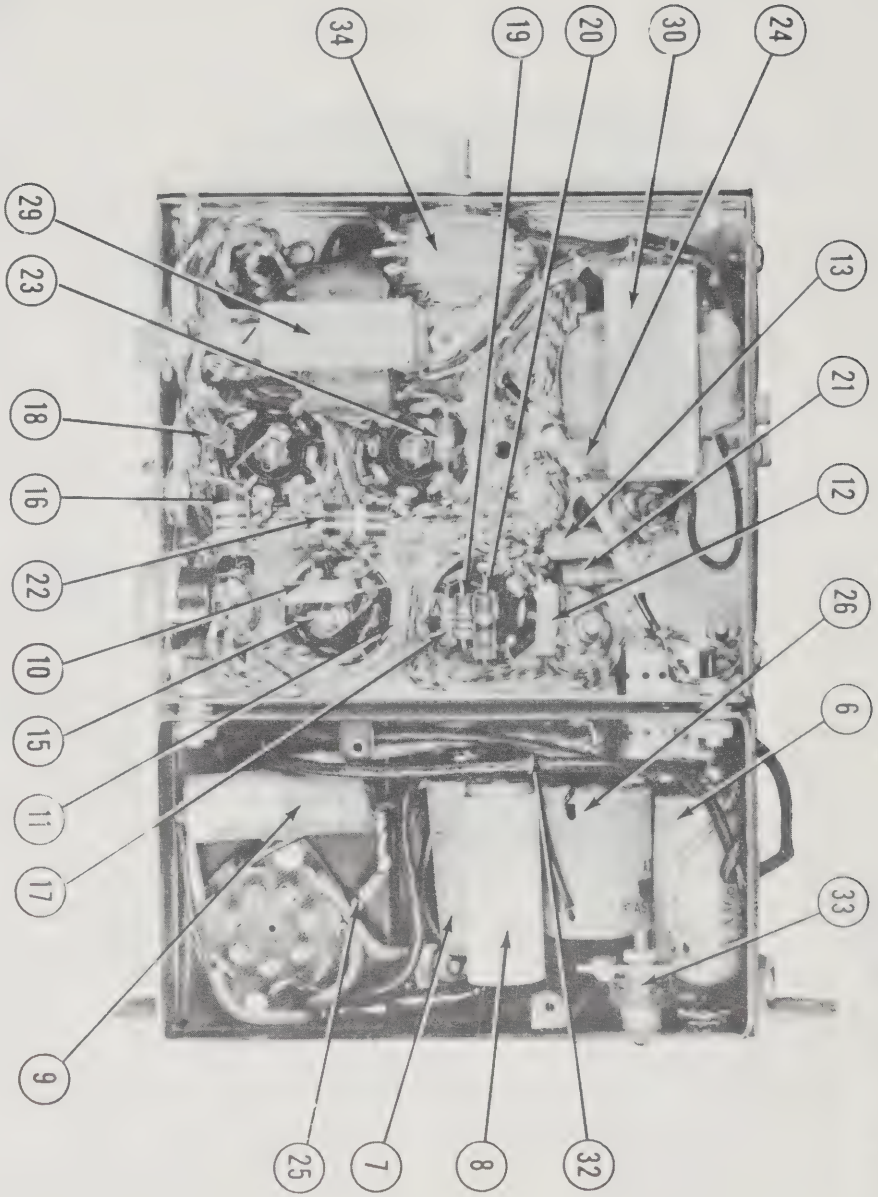
R F COILS

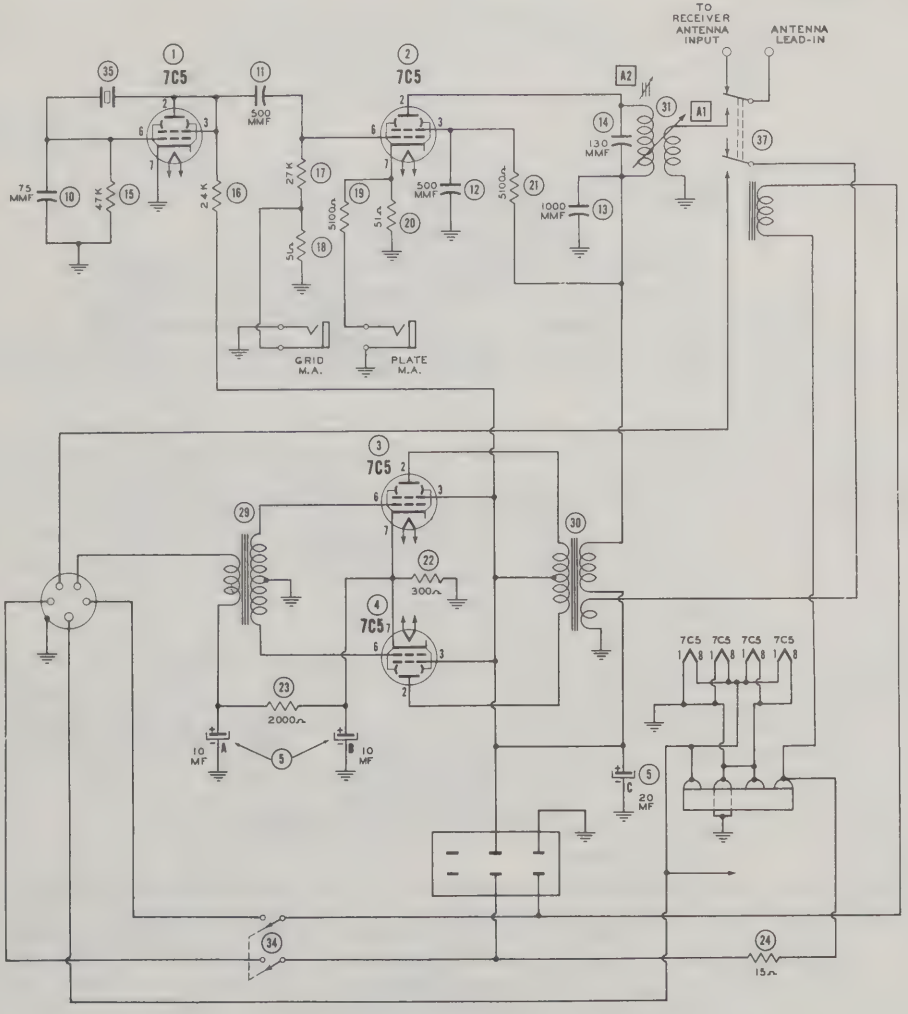
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	HARVEY-WELLS PART No.	MEISSNER PART No.	
31	Tank Coil	0Ω	0Ω	A-7709-501		
32	RF Choke		0Ω	A-7628-2		
33	RF Choke		12Ω	A-7629-501		

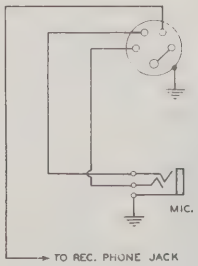
MISCELLANEOUS

ITEM No.	PART NAME	HARVEY-WELLS PART No.	NOTES
34	Switch	C-5190-14	On-Off
35	Crystal		Oscillator
36A	Relay	B-7692-2	Used in APS-1-6 Power Supply
B	"	B-7692-1	Used in APS-1-12 " "
37	"	A-7617-1	Transmit-Receiver
38A	Fuse	A-59-013-DCA15	Used in APS-1-6 Power Supply 15 Amp.
B	"	A-59-013-DCA10	Used in APS-1-12 " " 10 "

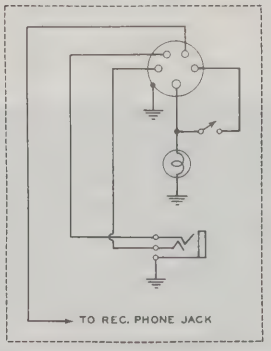
CHASSIS—BOTTOM VIEW



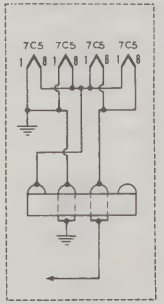


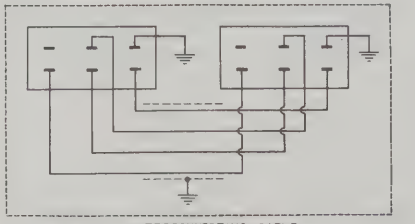


REMOTE CONTROL UNIT



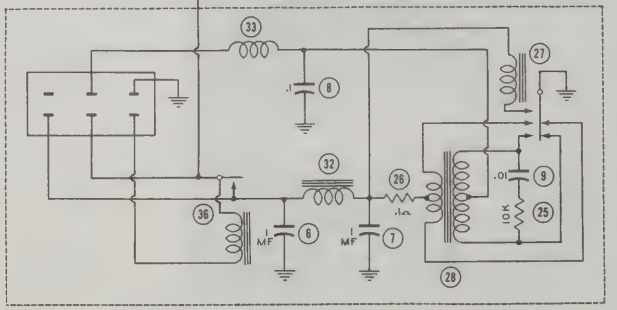
ALTERNATE CIRCUIT FOR 12 VOLT OPERATION





INTERCONNECTING CABLE

APS-1 POWER SUPPLY



Pin No.	7C5 (1) Volt	7C5 (1) Res.	7C5 (2) Volt	7C5 (2) Res.
1	0V.	0Ω	6VDC	1Ω
2	80VDC	105KΩ	250VDC	80KΩ
3	80VDC	105KΩ	230VDC	85KΩ
4	0V.	INF.	1.2VDC	5KΩ
5	0V.	INF.	-.1VDC	50Ω
6	-1.3VDC	50KΩ	-13VDC	27KΩ
7	0V.	0Ω	1.2VDC	50Ω
8	6VDC	1Ω	12VDC	2Ω

Pin No.	7C5 (3) Volt	7C5 (3) Res.	7C5 (4) Volt	7C5 (4) Res.
1	0V.	0Ω	6VDC	1Ω
2	250VDC	80KΩ	250VDC	80KΩ
3	253VDC	80KΩ	253VDC	80KΩ
4	0V.	INF.	16VDC	2.5KΩ
5	0V.	INF.	0V.	INF.
6	0V.	1.1KΩ	0V.	1.3KΩ
7	14VDC	30KΩ	18VDC	300Ω
8	6VDC	1Ω	12VDC	2Ω

Pin No.	7C5 (1) Volt	7C5 (1) Res.	7C5 (2) Volt	7C5 (2) Res.
1	0V.	0Ω	6VDC	.2Ω
2	+2.2VDC	105KΩ	235VDC	80KΩ
3	65VDC	105KΩ	210VDC	85KΩ
4	0V.	INF.	2VDC	5KΩ
5	65VDC	1.5MΩ	-.1VDC	50KΩ
6	-2.3VDC	50KΩ	-0.4VDC	27KΩ
7	0V.	0Ω	2.1VDC	50Ω
8	6VDC	.2Ω	0V.	0Ω

Pin No.	7C5 (3) Volt	7C5 (3) Res.	7C5 (4) Volt	7C5 (4) Res.
1	0V.	0Ω	6VDC	.2Ω
2	235VDC	80KΩ	230VDC	80KΩ
3	234VDC	80KΩ	225VDC	90KΩ
4	0V.	INF.	15VDC	2.5KΩ
5	0V.	INF.	0V.	INF.
6	0V.	1.1KΩ	0V.	1.3KΩ
7	15VDC	30KΩ	16VDC	300Ω
8	6VDC	.2Ω	0V.	0Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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482-11

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.

HOWARD
MODEL 474

HOWARD
MODEL 474

HOWARD MODEL 474

TRADE NAME	Howard, Model 474
MANUFACTURER	Howard Radio Co., 1735 Belmont Ave., Chicago, Ill.
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12AT7 FM Conv.-Det., 12BE6 AM Conv., 12BA6 AM IF Amp., 12AT6 Det.-AVC-AF, 50L6GT Power Output
POWER SUPPLY	105-125 Volts AC-DC — RATING .275 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC — FM 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Ant. Dummy consists of a 200 MMF capacitor in series with a 20 micro-henry coil which is shunted by a 400 MMF. capacitor in series with a 400Ω carbon resistor.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to Pin 7 (grid) 12BE6. Low side to B-.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	Antenna Dummy	High side to ext. BC ant. clip. Low side to B-.	1400KC	"	1400KC	"	A5	Adjust for maximum output.
3	Antenna Dummy	"	"	"	Tune for maximum output.	"	A6	" " " "
4	.05 MFD	High side to ext. FM ant. clip. Low side to FM ground clip.	21.35MC (unmodulated)	FM	Tuning cap. fully open.	"	A7	Adjust for minimum noise.
5	2 150Ω carbon res.	High side to ext. FM ant. clip in series with 150Ω. Low side to FM ground clip in series with 150Ω.	105MC	"	105MC	"	A8	" " " "
6	"	"	"	"	Tune for maximum output.	"	A9	Rock tuning cap. and adjust for maximum output. Check tracking at 90 & 100MC.

HOWARD W. SAMS & CO., INC. **Indianapolis 6, Indiana**

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DATE 1/48 SET #32 FOLDER #482-12

PARTS LIST AND DESCRIPTIONS

HOWARD MODEL 474

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HOWARD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM Conv.-Det.	12AT7	12AT7		
2	AM Conv.	12BE6	12BE6	7CH	
3	AM IF Amp.	12BA6	12BA6	7BK	
4	Det.-AVC-AF	12AT6	12AT6	7BT	
5	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HOWARD PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150	CE-0007	DY-3x40-150	EL-340	AF388D	UP44415	▲ Filter
B	30	150						▲ "
C	30	150						▲ "
7	40	150	CE-0016	M-40-150	UT-401	PRS150-40	BR4015	Filter
8	25	25	CE-0005	M-25-25	TA-25	PRS25-25	BR252A	Cathode Bypass
9	10	25	CE-0019	M-10-25	TA-10	PRS25-10	BR102A	Stabilizing Cap.
10	.05	600		MPH-6-05	TC-15	684-05	DT6S5	Line Filter
11	.002	400		S-4-002	TC-22	484-002	DT6D2	Output Plate Bypass
12	.01	600		S-6-01	TC-11	684-01	DT4S1	Audio Coupling
13	.1	400		S-4-1	TC-1	484-.1	DT4P1	AF Plate Decoupling
14	.01	400		S-4-01	TC-11	484-01	DT4S1	Audio Coupling
15	.05	200		S-4-05	TC-15	484-05	DT4S5	IF Cathode Bypass
16	.05	200		S-4-05	TC-15	484-05	DT4S5	AVC Filter
17	.02	600		S-6-02	TC-12	684-02	DT6S2	Ext. Ant. Isolation
18	.2	600		S-6-2	TC-2	684-.2	DT6P2	Line Isolation
19	.02	400		S-4-02	TC-12	484-02	DT4S2	Audio Coupling
20	100			MO.5-31	1FM-31	1468-0001	5W5T1	Filament Bypass
21	300			MO.5-33	1FM-335	1468-0003	5W5T3	Audio Plate Bypass
22	100			MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
23	100			MO.5-31	1FM-31	1468-0001	5W5T1	" " "
24	50			MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid
25	1000			MO.3-21	1FM-21	1468-001	1W5D1	De-emphasis
26	2.2							FM Ant. Coupling
27	2.2							Osc. Coupling
28	50			MOS.5-45	MS-45	1469-00005	5R5Q5	Fixed Pad
29	20							FM Osc. Grid
30	500							RF Bypass
31	500							Osc. Feedback
32	2500			MW.5-225		1467-0025	1W5D25	Quench Network
68	100			MO.5-31	1FM-31	1468-0001	5W5T1	Int. FM Ant. Coupling
69	500							RF Bypass - Cer.

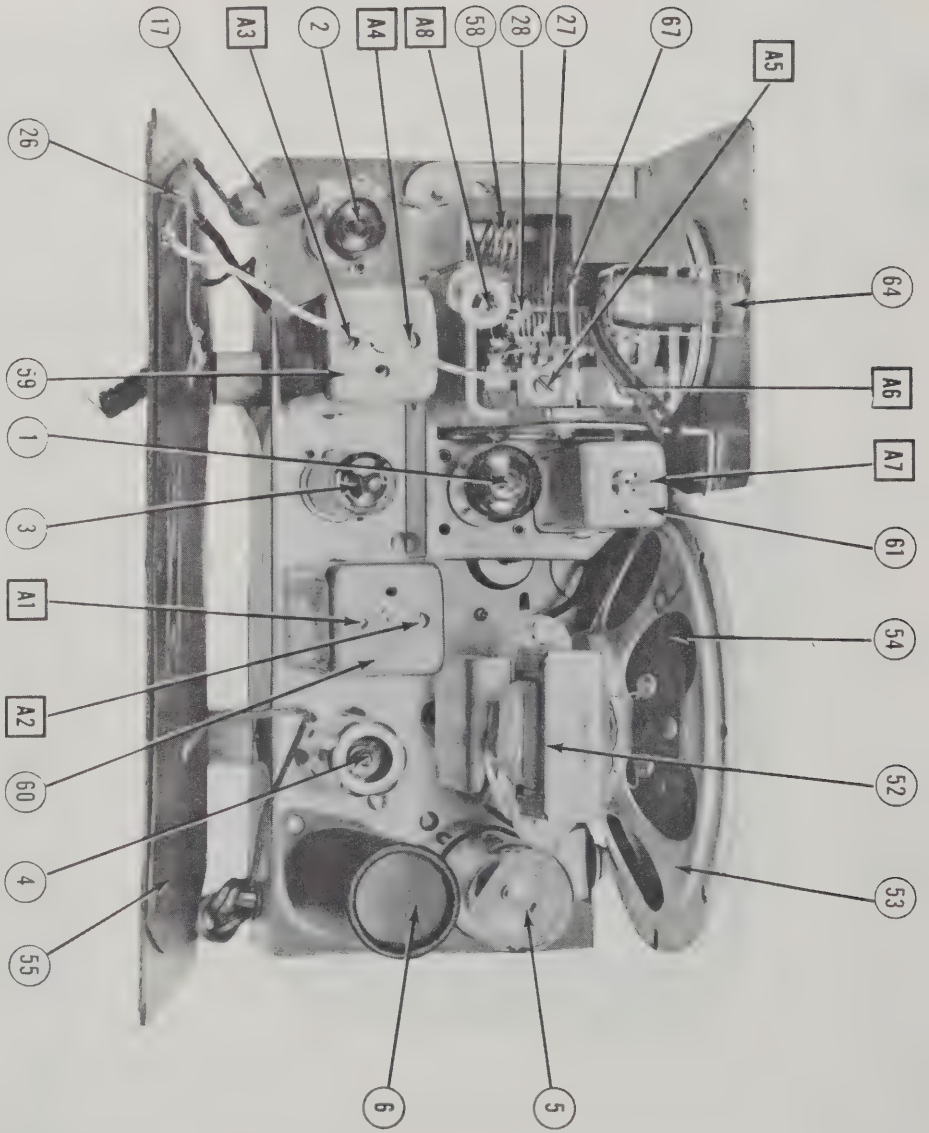
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOWARD PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
33A	500KΩ	½	VC-0001	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 33A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOWARD PART No.	IRC PART No.	IDENTIFICATION CODES
34	22KΩ	¼		BTS-22K	Red-Red-Or. FM Oscillator Grid
35	100Ω	¼		BW-½-100	Br.-Blk.-Br. FM Plate Decoupling
36	1500Ω	¼		BTS-1500	Br.-Grn.-Red Quench Network
37	22KΩ	¼		BTS-22K	Red-Red-Or. FM Conv. Cathode
38	100KΩ	¼		BTS-100K	Br.-Blk.-Yl. De-emphasis
39	1000Ω	¼		BTS-1000	Br.-Blk.-Red Decoupling
40	22KΩ	¼		BTS-22K	Red-Red-Or. Oscillator Grid
41	270Ω	¼		BW-½-270	Red-Vi.-Br. IF Cathode
42	47KΩ	¼		BTS-47K	Yl.-Vi.-Or. Diode Filter
43	2.2 Meg.	¼		BTS-2.2 Meg.	Red-Red-Grn. AVC Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HOWARD PART No.	IRC PART No.	
44	10 Meg.	¼		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
45	220KΩ	¼		BTS-220K	Red-Red-Yl. AF Plate Load
46	47KΩ	¼		BTS-47K	Yl.-Vi.-Or. AF Plate Decoupling
47	500KΩ	¼		BTS-470K	Grn.-Blk.-Yl. Output Grid
48	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
49	2000Ω	1		BTA-2200	Red-Blk.-Red Filter
50	Special		RC0097		Negative Temp. Coefficient Res. 791Ω cold. 100Ω hot.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	HOWARD PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
51	.056A	130Ω	2.4 Henries	LC-0011	C-1706		C-2975	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HOWARD PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
52	3000Ω	4.3Ω	90Ω	.4Ω	TO-0001	A-3876	T22845	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			HOWARD PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107		
53	PM	4.3Ω	SK-0009	Mod. P5-V		
	CONE DIA.	VC DIA.				
54	4-3/4"	1/2"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT		

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	HOWARD PART No.	MEISSNER PART No.
55	Loop Ant.	0Ω	2Ω	AN-0011	
56	FM RF Coil		0Ω	LR-0008	
57	BC Osc. Coil	.5Ω	3.1Ω	LO-0024	
58	FM Osc. Coil		0Ω	LO-0025	
59	1st IF	21Ω	21Ω	LI-0021	16-6666
60	2nd IF	22Ω	22.1Ω	LI-0022	16-5714
61	FM IF		3Ω	LI-0028	
62	RF Choke		.1Ω	LC-0016	
63	" "	.1Ω	.1Ω	LC-0015	

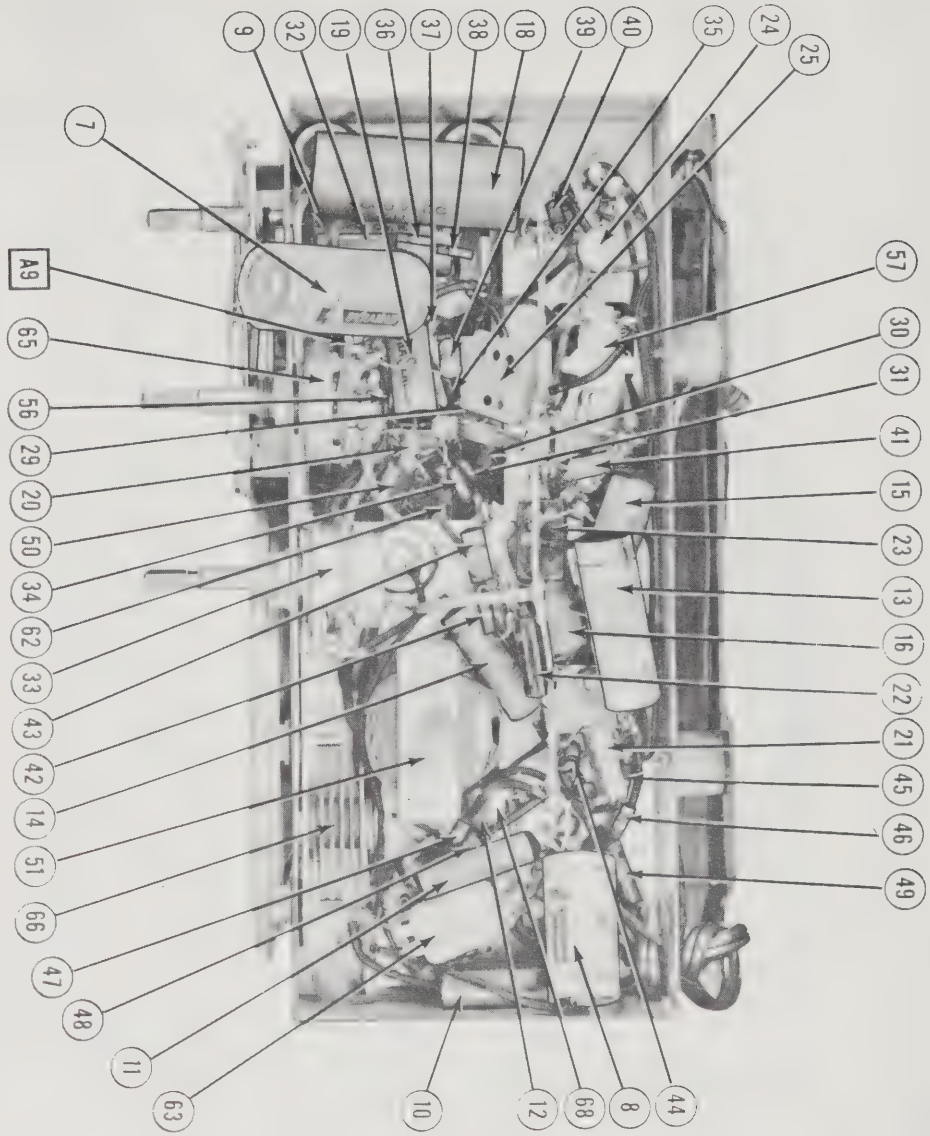
DIAL LIGHT

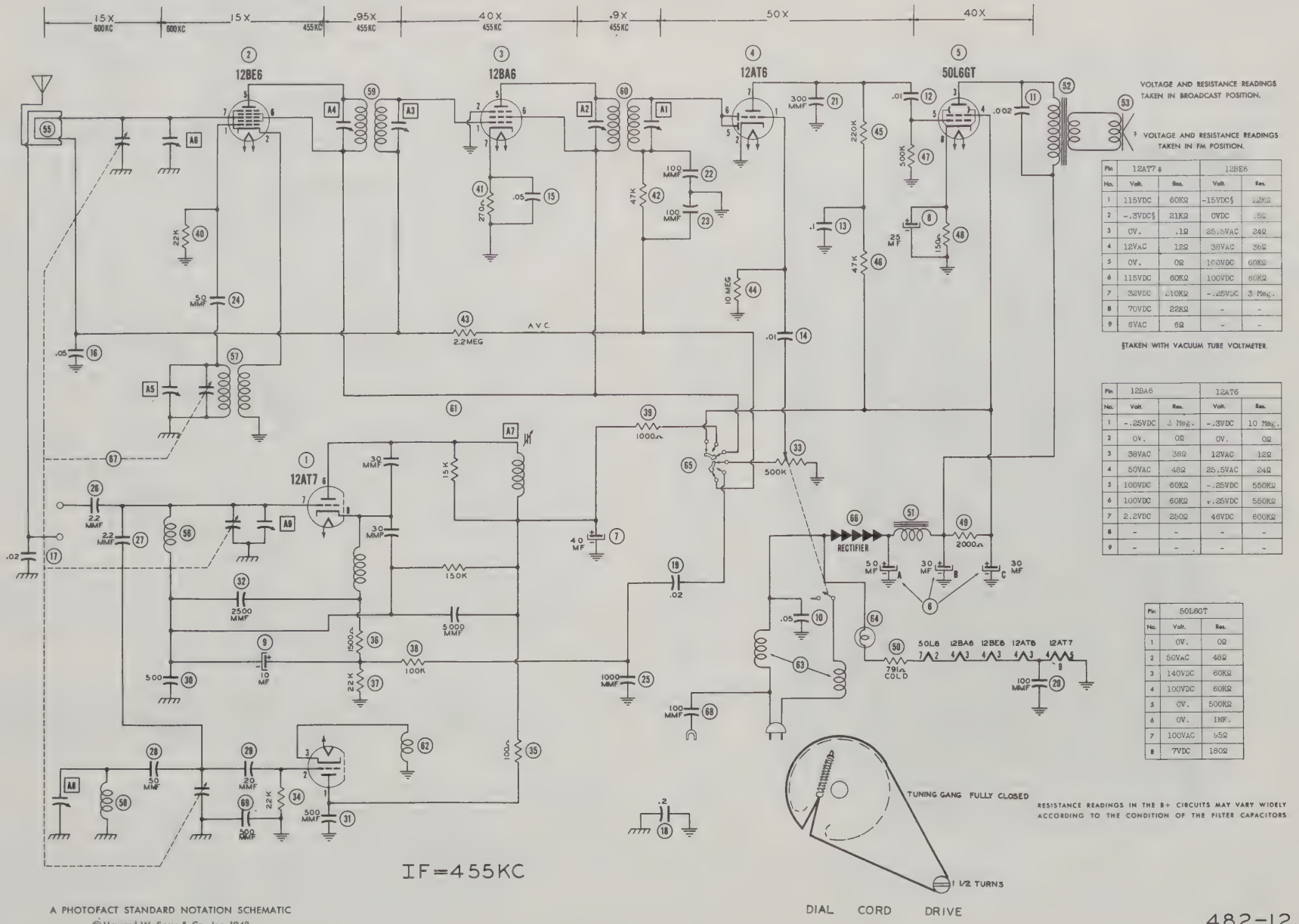
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HOWARD PART No.		
64	Bayonet	6-8	0.15	Brown	LS-0001		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	HOWARD PART No.	NOTES
65	Switch	SW-0005	Band
66	Rectifier	SR-0003	Selenium
67	Tuning Cap.	AC-0009	
	Dial Plate	AR-0064	Calibrated
	Dial Pointer	HD-0002	

CHASSIS—BOTTOM VIEW





VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

Pin No.	12AT7 ‡ Volt.	Res.	12BE6 Volt.	Res.
1	115VDC	60KΩ	-15VDC§	22KΩ
2	-.3VDC§	21KΩ	0VDC	.5Ω
3	0V.	.1Ω	25.5VAC	24Ω
4	12VAC	12Ω	38VAC	36Ω
5	0V.	0Ω	100VDC	60KΩ
6	115VDC	60KΩ	100VDC	60KΩ
7	32VDC	210KΩ	-.25VDC	3 Meg.
8	70VDC	22KΩ	-	-
9	6VAC	6Ω	-	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin No.	12BA6 Volt.	Res.	12AT6 Volt.	Res.
1	-.25VDC	3 Meg.	-.3VDC	10 Meg.
2	0V.	0Ω	0V.	0Ω
3	38VAC	36Ω	12VAC	12Ω
4	50VAC	48Ω	25.5VAC	24Ω
5	100VDC	60KΩ	-.25VDC	550KΩ
6	100VDC	60KΩ	-.25VDC	550KΩ
7	2.2VDC	250Ω	46VDC	600KΩ
8	-	-	-	-
9	-	-	-	-

Pin No.	50L6GT Volt.	Res.
1	0V.	0Ω
2	50VAC	48Ω
3	140VDC	60KΩ
4	100VDC	60KΩ
5	0V.	500KΩ
6	0V.	1MF.
7	100VAC	55Ω
8	7VDC	180Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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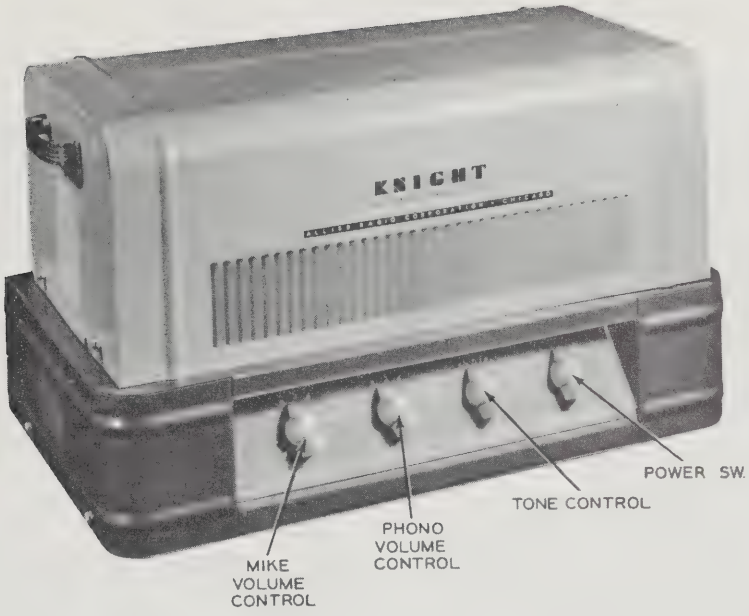
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



KNIGHT MODEL 93-024

TRADE NAME	Knight, Model 93-024
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill.
TYPE SET	AC Operated Two Channel Input Amplifier
TUBES (FIVE)	Types, 6SJ7 Mic. Amp., 6SC7 Phase Inv., (2) 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .67 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SJ7	0V	3.1VAC	0V	†	0V	21VDC	3.1VAC	80VDC
2	6SC7	0V	115VDC	0V	0V	120VDC	1.3VDC	3.1VAC	3.1VAC
3	6V6GT	0V	3.1VAC	350VDC	320VDC	0V	0V	3.1VAC	23VDC
4	6V6GT	0V	3.1VAC	350VDC	320VDC	0V	0V	3.1VAC	23VDC
5	5Y3GT	0V	360VDC	0V	330VAC	0V	330VAC	0V	360VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SJ7	0Ω	.1Ω	0Ω	†	0Ω	2.5Meg	.1Ω	650KΩ
2	6SC7	0Ω	350KΩ	10KΩ	250KΩ	350KΩ	1KΩ	.1Ω	.1Ω
3	6V6GT	0Ω	.1Ω	100KΩ	105KΩ	500KΩ	500KΩ	.1Ω	250Ω
4	6V6GT	0Ω	.1Ω	100KΩ	105KΩ	500KΩ	Inf	.1Ω	250Ω
5	5Y3GT	Inf	100KΩ	Inf	120Ω	Inf	110Ω	Inf	100KΩ

† DO NOT MEASURE BIAS CELL

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected for voltage measurements.

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KNIGHT
MODEL 93-024

PARTS LIST AND DESCRIPTIONS

KNIGHT MODEL 83-024

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. Amp.	6SJ7	6SJ7	8N	
2	Phase Inv.	6SC7	6SC7	8S	
3	Power Output	6V6GT	6V6GT	7AC	
4	" "	6V6GT	6V6GT	7AC	
5	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	450		DY-4x10-450*	UT-40	PRS450-30	BR4045	▲ Filter
B	10			M-30-450	EL-310	AF22225	UP11145	"
C	10							▲ "
D	10							■ "
7	16	350		M-16-450	UT-163	PRS350-16	EZ1635	"
8A	40	25		DY-2x40-150	TA-440	PRSA150-40-40	EZ5515	Cathode Bypass
B	40	25						Cathode Bypass
9	.02	400		S-4-02	TC-12	484-02	DT4S2	Audio Coupling
10	.02	400		S-4-02	TC-12	484-02	DT4S2	" "
11	.005	600		S-6-005	TC-25	684-005	DT6D5	" "
12	.006	1600		TM-16-006	TR-26	1684-006	MD16D6	Tone Comp.
13	.05	400		S-4-05	TC-15	484-05	DT4S5	AF Screen Bypass

*Parallel sections to obtain desired capacity.

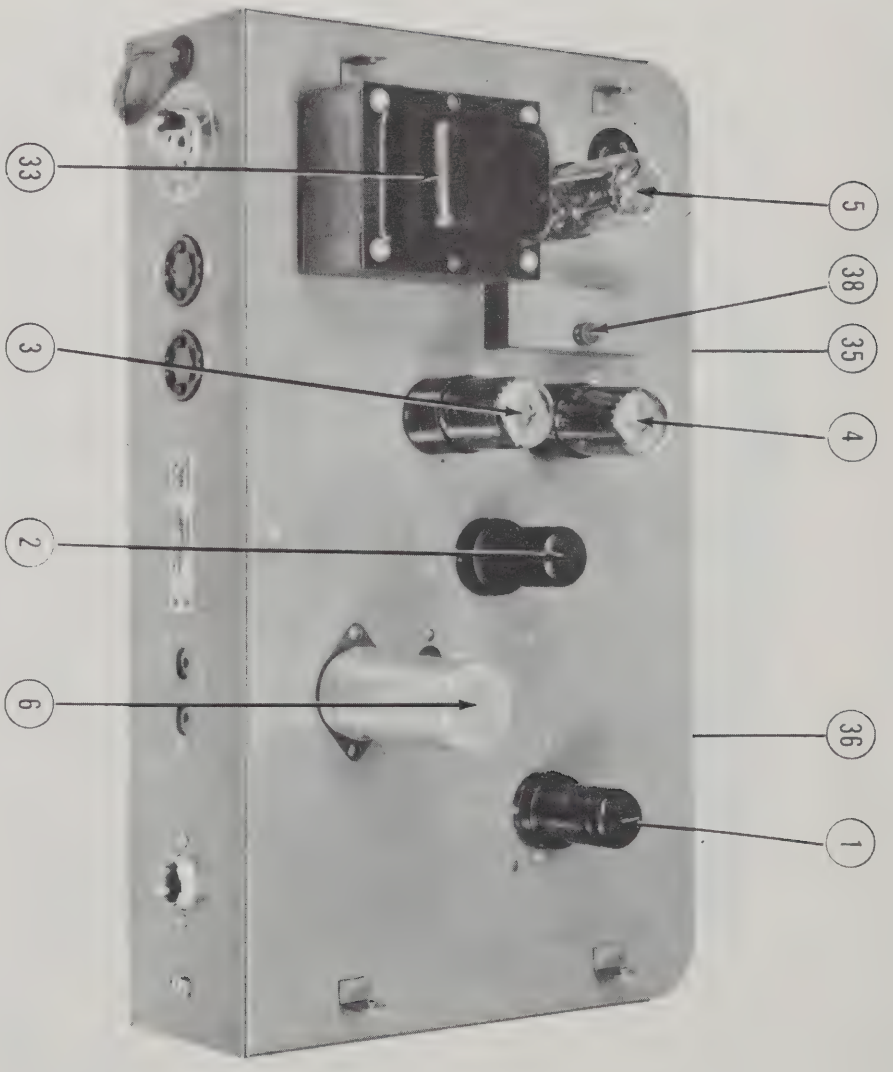
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
14A	500KΩ	½		D13-133	M-60-Z	Mike Volume Control
B	Shaft			A	Not Req.	Attach to 14A per instructions
15A	500KΩ	½		D13-133	M-60-Z	Phono Volume Control
B	Shaft			A	Not Req.	Attach to 15A per instructions
16A	250KΩ	½		D13-130	M-64-Z	Tone Control
B	Shaft			A	Not Req.	Attach to 16A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES
17	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Series Phono
18	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. 1st AF Grid
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. 1st AF Screen Dropping
20	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
21	22KΩ	½		BTS-22K	Red-Red-Or. 1st AF Decoupling
22	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Decoupling
23	1000Ω	½		BTS-1000	Br.-Blk.-Red 2nd AF Cathode
24	250KΩ	½		BTS-220K	Red-Grn.-Yl. 2nd AF Plate Load
25	250KΩ	½		BTS-220K	Red-Grn.-Yl. Phase Inverter Plate Load
26	10KΩ	½		BTS-10K	Br.-Blk.-Or. Phase Inverter Grid
27	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
28	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. " "
29	250Ω	10		AB-250	Output Cathode
30	10KΩ	½		BTS-10K	Br.-Blk.-Or. Decoupling
31	4700Ω	1		BT-4700	Yl.-Vi.-Red Filter
32	47 Meg.	½			Yl.-Vi.-Blue Feedback

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	KNIGHT PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
33	117V AC @ .67A	660V CT @ .09A	5.2V AC @ 2.1A	6.1V CT @ 2.5A	LP-0014-A	P-6012	T22R04	P-2952

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
34	10000 Ω CT	4Ω 6Ω 8Ω 500Ω	400Ω CT	.3Ω .4Ω .45Ω 42Ω	LO-0039-A	A-3304†	T22S64†	A-3128†	†Mount on top of chassis.

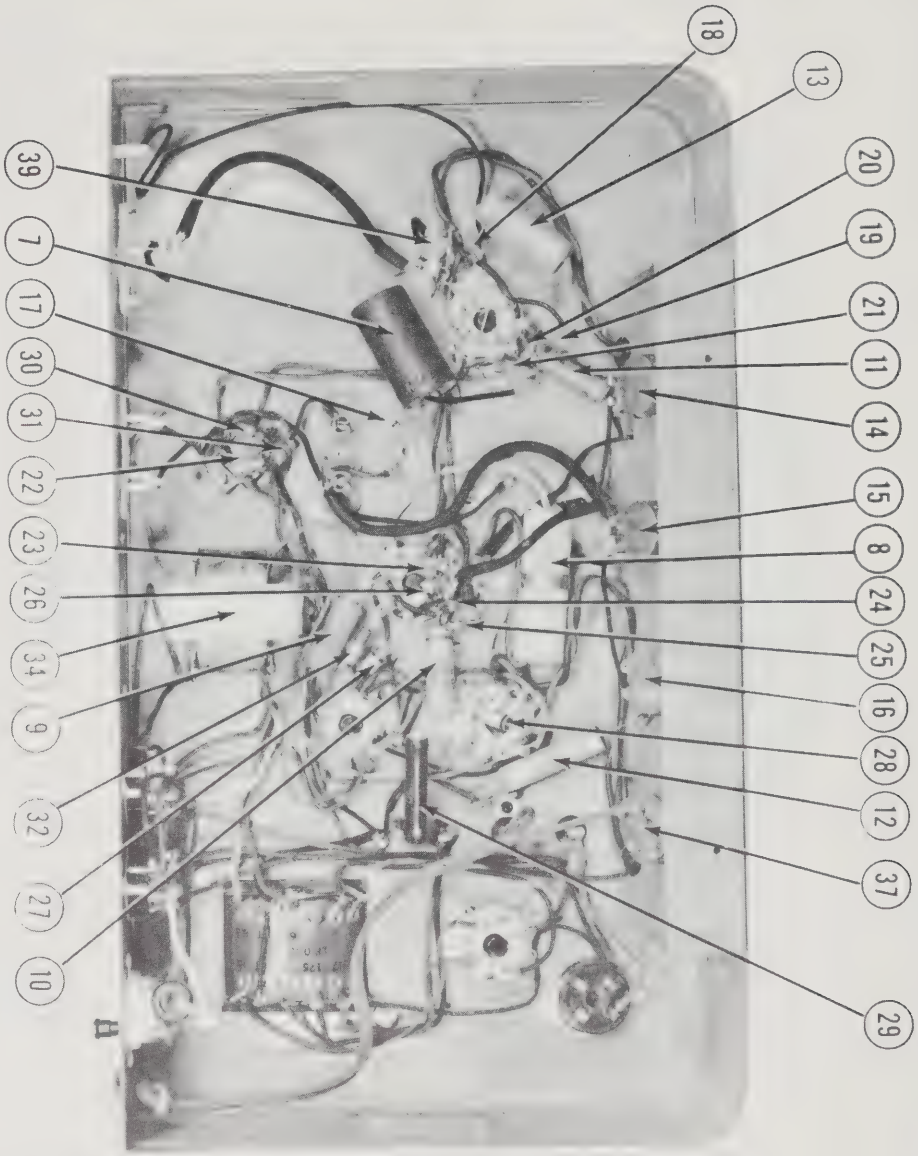
DIAL LIGHT

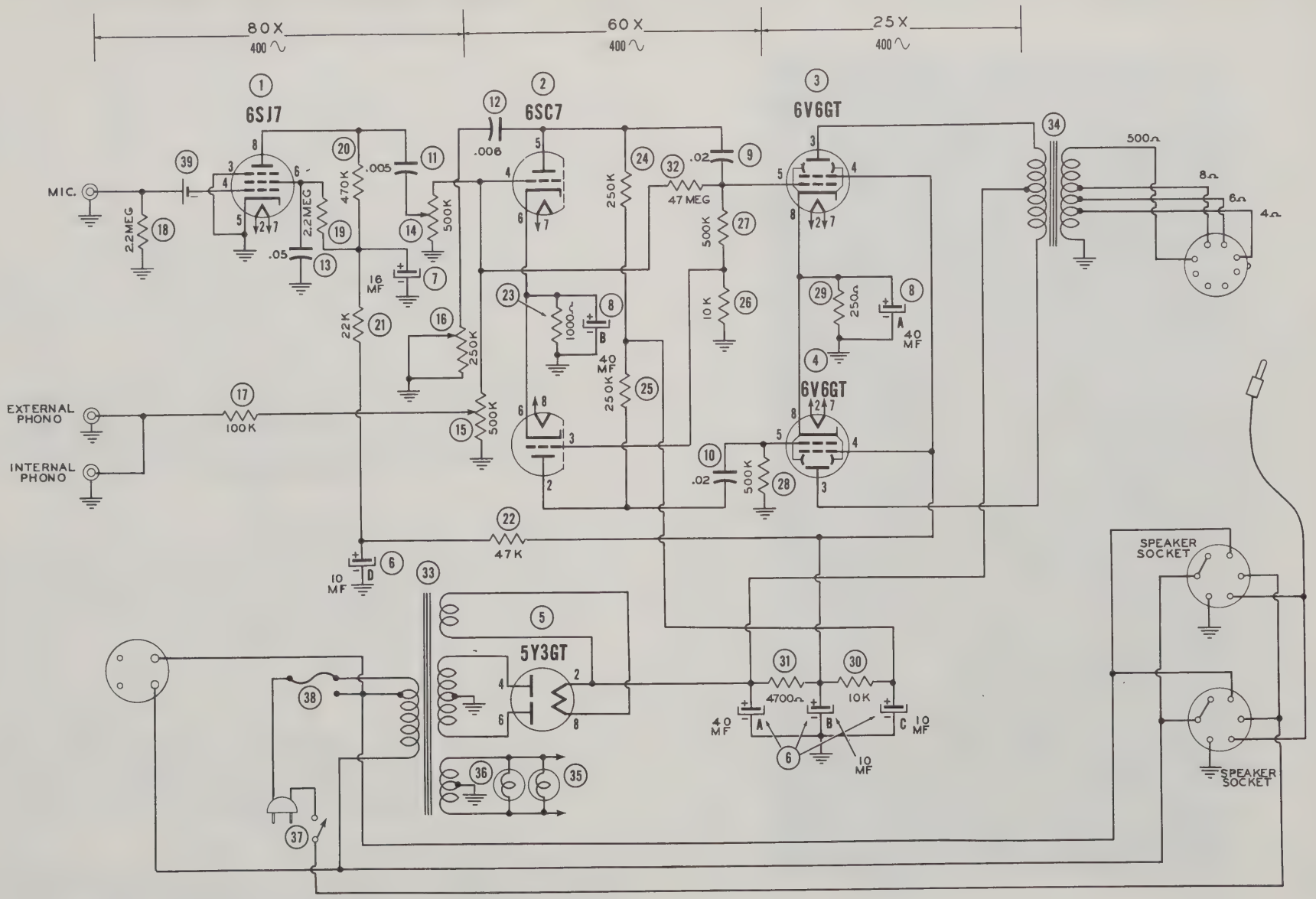
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					KNIGHT PART No.		
35	Bayonet	6-8	0.4	White			Type 55
36	"	"	"	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
37	Switch		On-Off (SPST)
38	Fuse		3 Amp.
39	Bias Cell		

CHASSIS—BOTTOM VIEW





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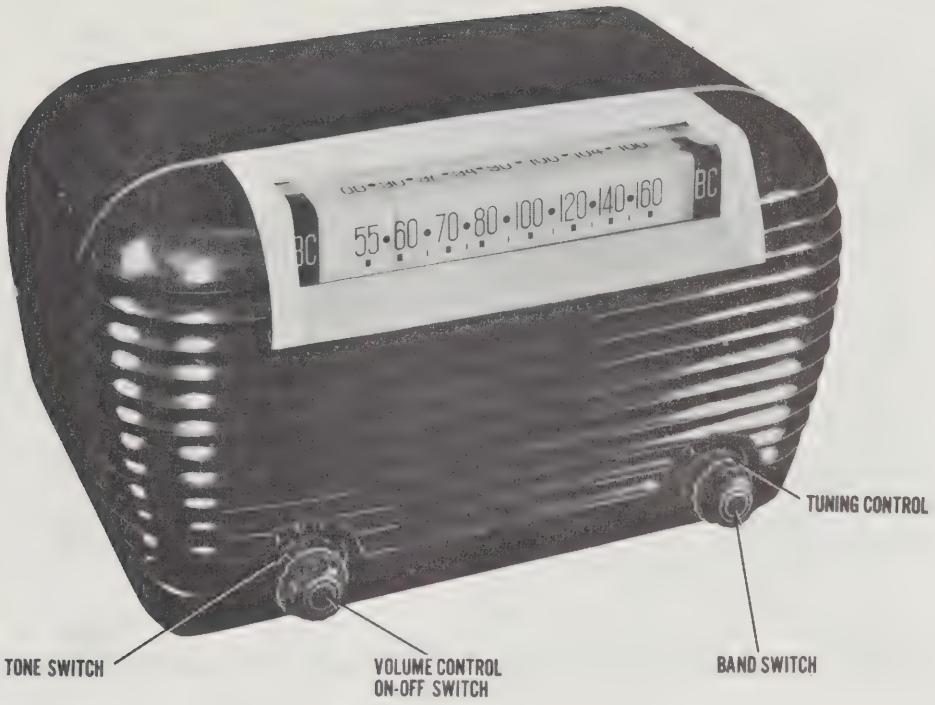
MOTOROLA MODEL
67XM21 (Ch. HS-64)



MOTOROLA MODEL 67XM21

TRADE NAME	Motorola, Model 67XM21 (Ch. HS-64)
MANUFACTURER	Motorola, Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12AT7 1st & 2nd FM Converter, 12BE6 FM IF Amp.-AM Conv., 12BA6 IF Amp., 19T8 Det.-AVC-AF, 50B5 Power Output.
POWER SUPPLY	105-125 Volts AC-DC RATING .34 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1620KC FREQ. MOD. 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Before starting alignment set pointer per dial cord drawing.
Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 1 (grid) 12BE6. Low side to B-.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	.1 MFD.	"	1620KC	"	"	"	A5	Adjust for maximum output. Trimmer opposite A5 is a factory adjustment and normally need not be adjusted.
3		Loop	1400KC	"	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FOR FM ALIGNMENT SEE PAGE 4

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DATE 1/48 SET #32 FOLDER #482-14

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
1	1st & 2nd FM Conv.	12AT7	12AT7		
2	FM-IF AM Conv.	12BE6	12BE6	7CH	
3	IF Amp.	12BA6	12BA6	7BK	
4	Det.-AVC-AF	19T8	19T8		
5	Power Output	50B5	50B5	7BZ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MOTOROLA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	
6A	40	200	23B470429	M-40-350	EL354		UP42215		■ Filter
B	20	150		DY-2x20-150					▲ "
C	20	150							"
7	.05	400	8S9816	MPH-4-05	TC-15	484-05	DT4S5		Line Filter
8	.02	400	8A471019	S-4-02	TC-12	484-02	DT4S2		Output Plate Bypass
9	.05	400	8K471635	S-4-05	TC-15	484-05	DT4S5		Tone Compensation
10	.01	400	8S9809	S-4-01	TC-11	484-01	DT4S1		Audio Coupling
11	.25	50	8A470504	S-4-25	TC-2	484-25	DT4P25		Bias Filter
12	.005	100	8A24966	S-6-005	TC-25	484-005	DT6D5		Audio Coupling
13	.01	400	8S9809	S-4-01	TC-11	484-01	DT4S1		IF Decoupling
14	.05	100	8A71213	S-4-05	TC-15	484-05	DT4S5		IF Cathode Bypass
15	.01	100	8S9801	S-4-01	TC-11	484-01	DT4S1		AVC Network
16	.1	200	8K471636	S-4-1	TC-1	484-1	DT4P1		RF Bypass Power Supply
17	.01	100	8S9801	S-4-01	TC-11	484-01	DT4S1		AVC Network
18	.05	200	8A471623	S-4-05	TC-15	484-05	DT4S5		Line Isolation
19	.05	100	8A71213	S-4-05	TC-15	484-05	DT4S5		1st FM IF Cathode Byp.
20	.02	400	8S9802	S-4-02	TC-12	484-02	DT4S2		FM Conv. Cathode Bypass
21	250	500	21K777375	MO.5-325	1FM-325	1468-00025	5W5T25		AF Plate Bypass Cer.
22	4700	500	21B470567						AF Cathode Bypass Cer.
23	100	500	21B77286	MO.5-31	1FM-31	1468-0001	5W5T1		Disc. Diode Filter-Cer.
24	100	500	21B77286	MO.5-31	1FM-31	1468-0001	5W5T1		" " " "
25	500	500	21R6639	MO.5-35	1FM-35	1468-0005	5W5T5		De-emphasis
26	100	500	21B77286	MO.5-31	1FM-31	1468-0001	5W5T1		Diode RF Filter - Cer.
27	100	500	21B77286	MO.5-31	1FM-31	1468-0001	5W5T1		" " " "
28	4700	500	21B470567						FM Conv. Decoup. - Cer.
29	50	500	21K77373	MO.5-45	1FM-45	1468-00005	5W5Q5		Osc. Grid Cap. Cer.
30	250	500	21R2729	MOS.5-325		1469-00025	5R5T25		Osc. Coupling-Silver
31	250	500	21R2729	MOS.5-325		1469-00025	5R5T25		RF Coupling - Silver
32	500	500	21R2730	MOS.5-35	MS-35	1469-0005	5R5T5		FM Conv. Cath. Byp.-Sil.
33	1000	500	21R6638	MO.5-21	1FM-21	1468-001	1W5D1		Filament Bypass
34	50	500	21R6642	MO.5-45	1FM-45	1468-0005	5W5Q5		Antenna Coupling

CONTROLS

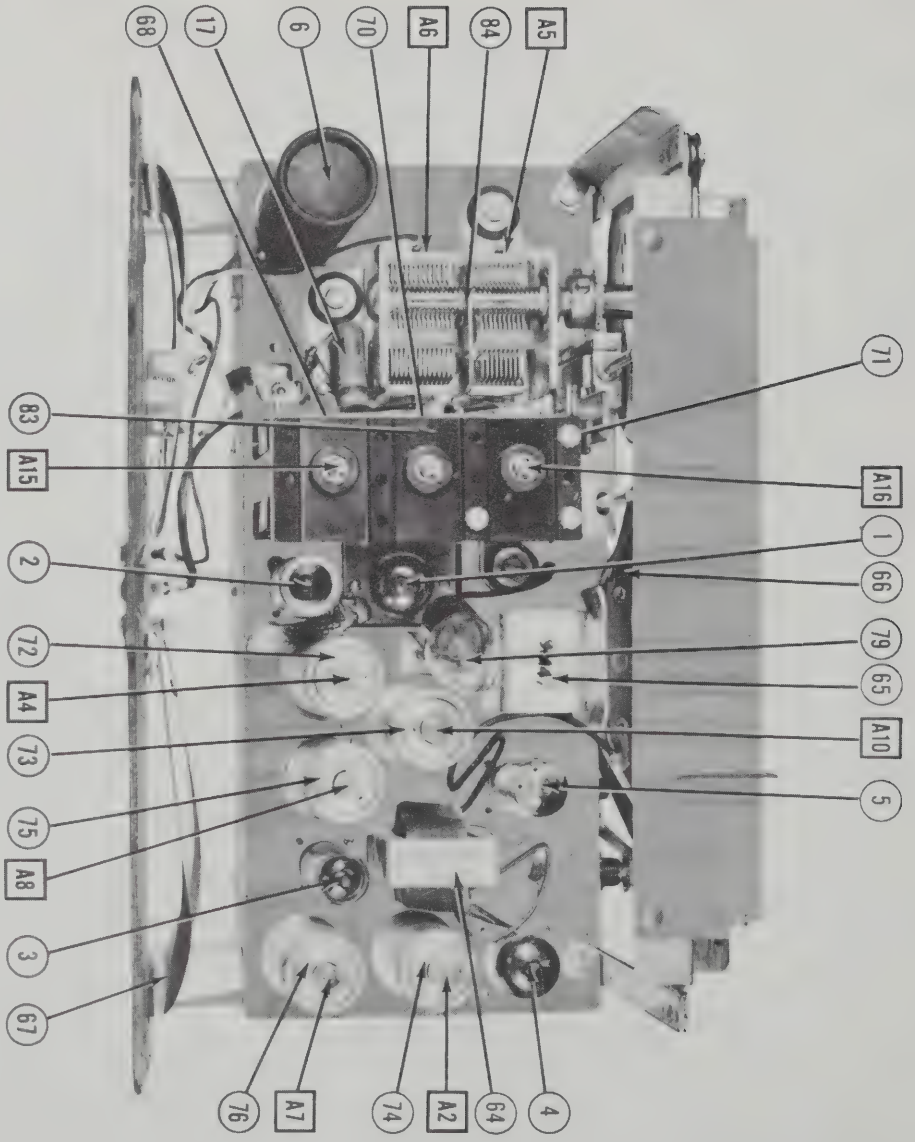
ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	
35A	500KΩ	½	18A470427A	D17-133X	AT-81	Volume Control tapped @ 25KΩ #
B	Shaft		Not Reg.	E	KSS-3	Attach to 35A per instructions
C	Switch		" "	41	SW-A	" " " " "

#Use original sleeve over control shaft to actuate tone switch.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
36	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. 1st FM Converter Grid
37	15KΩ	1	6R3996	BTA-15K	Br.-Grn.-Or. 1st FM Converter Plate Load
38	1 Meg.	1/8	6R6046	BTS-1 Meg.	Br.-Blk.-Grn. 2nd FM Converter Grid
39	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. 2nd FM Converter Plate Decoupling
40	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. Osc. Grid
41	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl. AVC Network
42	1000Ω	½	6R6301	BTS-1000	Br.-Blk.-Red Decoupling

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

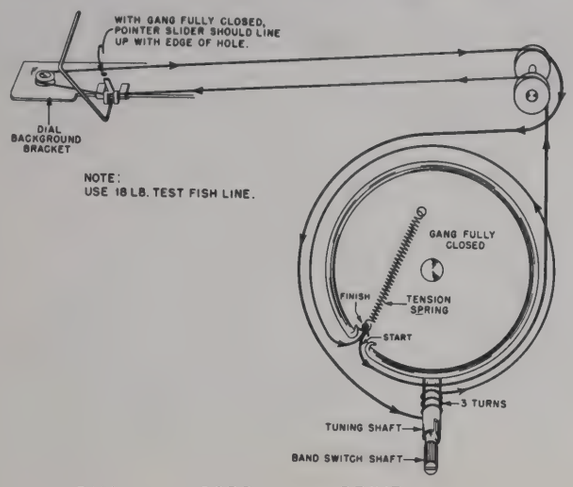
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
43	150Ω	± ± ±

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
S0	Switch	40S470432	Band
S1	"	40K21758	Tone (Slider SPDT)
S2	Rectifier	48B90140	Selenium
S3	Tuning Assby.	PT-14	FM
S4	2 Gang Var. Cap.	19K75415	(43-481MMF, 22-189MMF)
A12	Trimmer	19A470426	FM Osc. Adj.
	Pointer &Slider	1K77309	Assembly
	Dial Scale	34C470601	
	Knob	36A470602	Control (large)
	"	36A470604	" (small)



DIAL CORD DRIVE

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡	1	12AT7	57VDC	-.6VDC	.1VDC	33VAC	19VAC	65VDC	-1.7VDC§	.1VDC	26VAC
	2	12BE6	-6.7VDC§	.1VDC	33VAC	45VAC	88VDC	88VDC	-.2VDC	-	-
‡	2	12BE6	0V.	1.6VDC	33VAC	45VAC	88VDC	88VDC	88VDC	-	-
	3	12BA6	-.1VDC	.7VDC	45VAC	57VAC	82VDC	82VDC	.7VDC	-	-
	4	19T8	-.3VDC	-.6VDC	.2VDC	19VAC	0V.	-.4VDC	.3VDC	-.3VDC	63VDC
‡	4	19T8	-.4VDC	-.4VDC	.1VDC	19VAC	0V.	-.4VDC	.3VDC	-.3VDC	63VDC
	5	50B5	0V.	6.9VDC	108VAC	57VAC	107VDC	88VDC	0V.	-	-

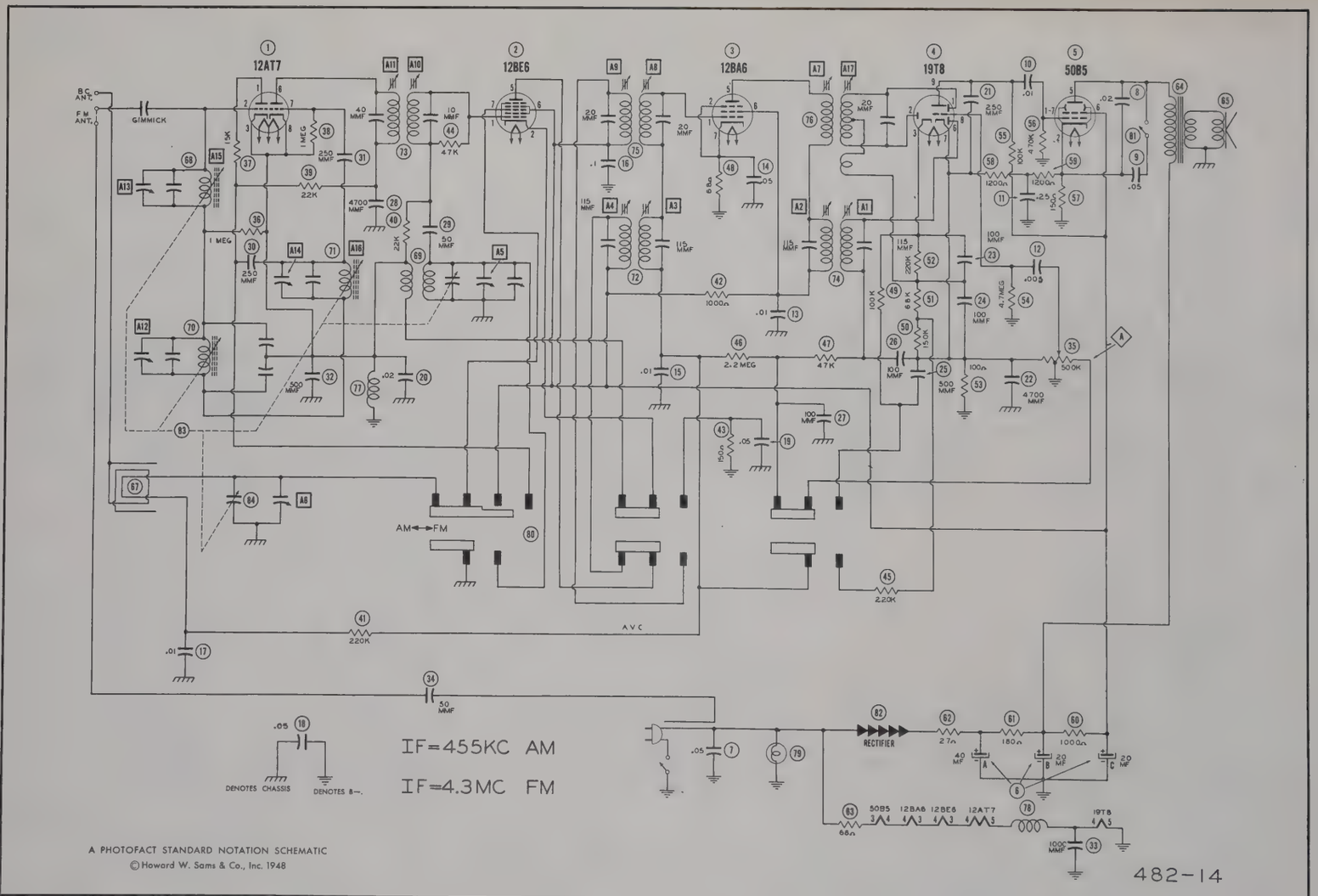
§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡	1	12AT7	45KΩ	1 Meg.	13Ω	25Ω	16Ω	52KΩ	1 Meg.	13Ω	22Ω
	2	12BE6	22KΩ	14Ω	25Ω	34Ω	30KΩ	30KΩ	3 Meg.	-	-
‡	2	12BE6	22KΩ	16Ω	25Ω	34Ω	30KΩ	30KΩ	30KΩ	-	-
	3	12BA6	3 Meg.	70Ω	34Ω	42Ω	30KΩ	30KΩ	70Ω	-	-
	4	19T8	250KΩ	250KΩ	480KΩ	16Ω	0Ω	500KΩ	100Ω	5 Meg.	130KΩ
‡	4	19T8	180KΩ	180KΩ	270KΩ	16Ω	0Ω	2.5 Meg.	100Ω	5 Meg.	140KΩ
	5	50B5	500KΩ	130Ω	65Ω	42Ω	30KΩ	30KΩ	500KΩ	-	-

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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OLYMPIC MODELS
7-532W, 7-532V

OLYMPIC MODELS
7-532W, 7-532V

OLYMPIC MODEL 7-532W

TRADE NAME	Olympic , Models 7-532W, 7-532V
MANUFACTURER	Olympic Radio & Tel. Corp., 3101-19 38 th Ave., Long Island City, N.Y.
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12AT7 or 14F8 FM Conv.-Det., 12SA7 AM Conv., 12SK7 AM IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC — RATING. .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1700KC — FREQ. MOD. 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at left end of dial diffuser plate.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 4 (grid) 12SK7. Low side to B-.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	"	"	"	"	A3,A4	Adjust for maximum output. Repeat Steps 1 & 2 until no further improvement can be made.
3		Loop	1700KC	"	1700KC reference mark on dial diffuser plate.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	1500KC	"	Tune for maximum output.	"	A6	Adjust for maximum output
5	300Ω carbon res.	High side to ext. ant. terminal. Low side to B-.	21.75MC (unmodulated)	FM	Tuning cap. fully open.	"	A7	Adjust for minimum noise.
6	"	"	107MC (unmodulated)	"	107MC ref. mark on diffuser plate.	"	A8	" " " "
7	"	"	103MC (unmodulated)	"	Tune for minimum noise.	"	A9	Rock tuning cap. and adjust for minimum noise.

HOWARD W. SAMS & CO., INC. **Indianapolis 6, Indiana**

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DATE 1/48 SET #32 FOLDER #482-15

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	FM Conv.-Det.	12AT7	12AT7		
B	" " "	14F8	14F8	8BW	
2	AM Conv.	12SA7	12SA7	8R	
3	AM IF Amp.	12SK7	12SK7	8N	
4	Det.-AVC-AF	12SQ7	12SQ7	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

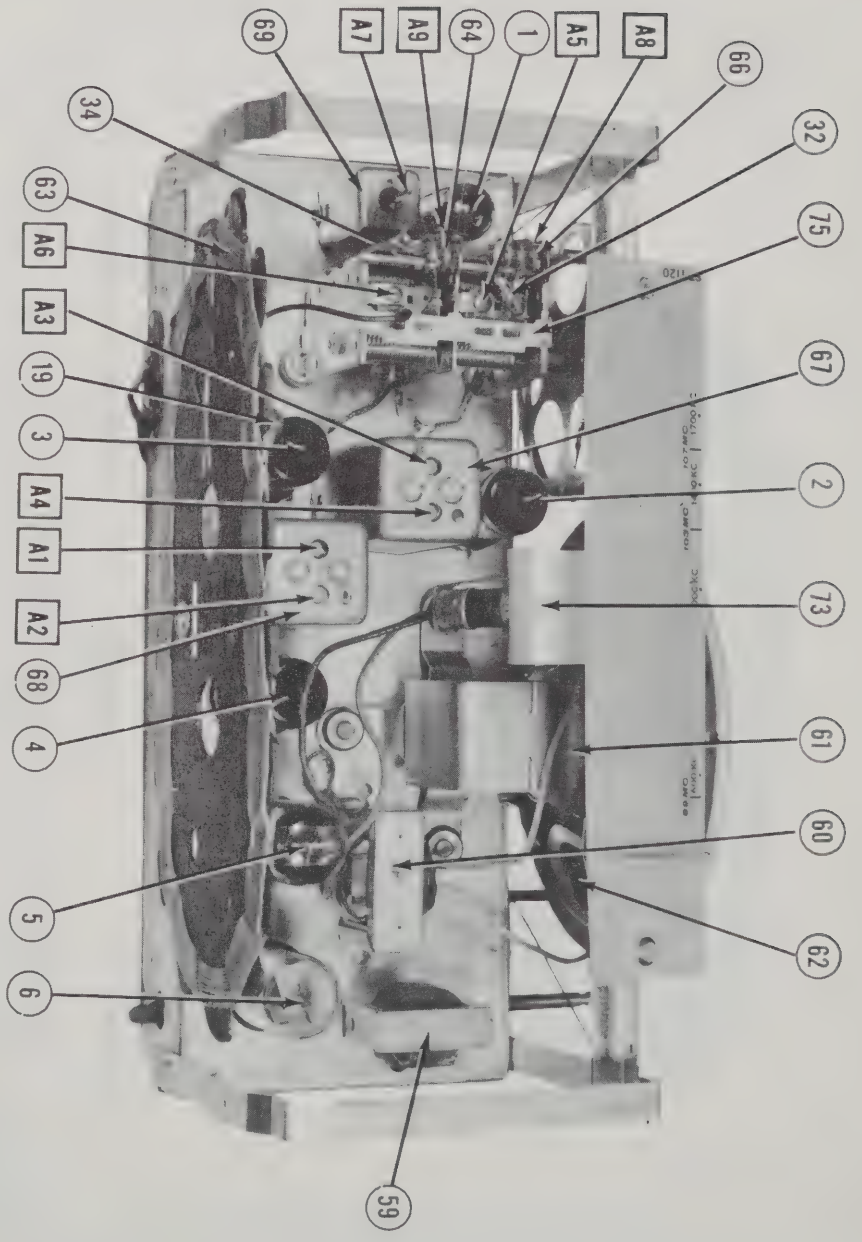
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	CO-791	DSB-8040-150		PRSA150-40-80	EZ443150*	Filter
B	70	150						"
8	80	150		DSB-2x40-150*	TA-440*	PRSA150-40-40*	EZ42215*	"
9	50	25	CO-808	M-50-25	TA-50	PRS25-50	BR502	Cathode Bias
10	10	25	CO-1113	M-10-25	TA-10	PRS25-10	BR102A	Stabilizing Cap.
11	.05	400	RCP10W4503A	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
12	.1	200	RCP10W2104A	S-2-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supply
13	.01	600	RCP10W6103A	S-6-01	TC-11	684-01	DT6S1	Output Plate Bypass
14	.02	600	RCP10W6203A	S-6-02	TC-12	684-02	DT6S2	Audio Coupling
15	.01	600	RCP10W6103A	S-6-01	TC-11	684-01	DT6S1	" "
16	.01	600	RCP10W6103A	S-6-01	TC-11	684-01	DT6S1	" "
17	.05	200	RCP10W4503A	S-4-05	TC-15	484-05	DT4S5	AVC Filter
18	.1	400	RCP10W4104L	S-4-1	TC-1	484-1	DT4P1	Line Isolation †
19	.01	600	RCP10W6103A	S-6-01	TC-11	684-01	DT6S1	Ext. Ant. Coupling
20	.01	600	RCP10W6103A	S-6-01	TC-11	684-01	DT6S1	Audio Coupling ‡
21	500		CCA-501M	MO.5-35	1FM-35	1468-0005	5W5T5	Rectifier Bypass-Cer.
22	330		RCM20A100M	MO.5-34	1FM-335	1468-00035	5W5T4	Tone Comp.
23	220		RCM20A221M	MO.5-325	1FM-325	1468-00025	5W5T25	AF Plate Bypass
24	100		CCA-101M	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling - Cer.
25	10		RCM20A100M	MO5.5-41	MS-41	1469-00001	5R5Q1	Fixed Trimmer ‡
26	5000		CCD-502X	MW.5-25	1FM-25	1467-005	1D5D5	RF Bypass - Cer.
27	30		CCA-L300K	MO5.5-44	MS-43		5R5Q3	Feedback - "
28	30		CCA-L300K	MO5.5-44	MS-43		5R5Q3	" - "
29	2500		CCR-252M	MW.5-225		1467-0025	1W5D25	Quench Network - Cer.
30	1000		CCA-102M	MO.3-21	1FM-21	1468-001	1W5D1	De-emphasis "
31	20		CCA-200M	MO5.5-42	MS-42		5W5Q2	Osc. Grid Cap. "
32	50		CCA-U500J	MO5.5-45	MS-45	1469-00005	5R5Q5	Fixed Pad "
33	2.2		CO-1112					FM Ant. Coupling "
34	2.2		CO-1112					FM Osc. Coupling "
35	100		CCA-101M	MO.5-31	1FM-31	1468-0001	5W5T1	FM Ant. Coupling "
36	500		CCA-501M	MO.5-35	1FM-35	1468-0005	5W5T5	RF Coupling "
37	500		CCA-501M	MO.5-35	1FM-35	1468-0005	5W5T5	RF Bypass "
38	500		CCA-501M	MO.5-35	1FM-35	1468-0005	5W5T5	" " "
76	100		CCA-101M	MO.5-31	1FM-31	1468-0001	5W5T1	Filament Bypass - ".
77	500		CCA-501M	MO.5-35	1FM-35	1468-0005	5W5T5	RF Bypass - Cer.

*Parallel sections to obtain desired capacity.
†Wind same number of turns on replacement as on original.
‡Not used in some models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
39A	2 Meg.	½	PT-105	D13-139	AM-66-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 39A per instructions
40A	500KΩ	½	PT-106	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to 40A per instructions
C	Switch		" "	41	SW-A	" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	OLYMPIC PART No.	IRC PART No.	
41	22KΩ	½	REB-223M	BTS-22K	Red-Red-Or. FM Oscillator Grid
42	22KΩ	½	REB-223M	BTS-22K	Red-Red-Or. FM Conv. Cathode
43	1500Ω	½	REB-152M	BTS-1500	Br.-Grn.-Red Quench Network
44	100KΩ	½	REB-104M	BTS-100K	Br.-Blk.-Yl. De-emphasis
45	100Ω	½	REB-101M	BW-½-100	Br.-Blk.-Br. FM Osc. Decoupling
46	15KΩ	½	REB-153M	BTS-15K	Br.-Grn.-Or. FM IF Trans. Shunt
47	150KΩ	½	REB-154M	BTS-150K	Br.-Grn.-Yl. Voltage Dropping
48	2200Ω	½	REB-222M	BTS-2200	Red-Red-Red Decoupling
49	2.2 Meg.	½	REB-225M	BTS-2.2 Meg.	Red-Red-Grn. Converter Grid
50	22KΩ	½	REB-223M	BTS-22K	Red-Red-Or. Oscillator Grid
51	2.2 Meg.	½	REB-225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
52	470KΩ	½	REB-474M	BTS-470K	Yl.-Vi.-Yl. Diode Load
53	10 Meg.	½	REB-106M	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
54	470KΩ	½	REB-474M	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
55	150Ω	1	REC-151M	BW-1-150	Br.-Grn.-Br. Output Cathode
56	1 Meg.	½	REB-105M	BTS-1 Meg.	Br.-Blk.-Grn. Feedback
57	220KΩ	½	REB-224M	BTS-220K	Red-Red-Yl. Line Isolation
58	100Ω	2	RED-101M	BW-2-100	Br.-Blk.-Br. Pilot Light Shunt

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	OLYMPIC PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
59	.08A	145Ω	2 Henries	CK-114	C-2303††	T20C53††		††Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLYMPIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
60	2200Ω	3.5Ω	140Ω	.3Ω	Part of SK-792	A-3876**	T22S45**	A-2928**	**Drill one new mounting hole

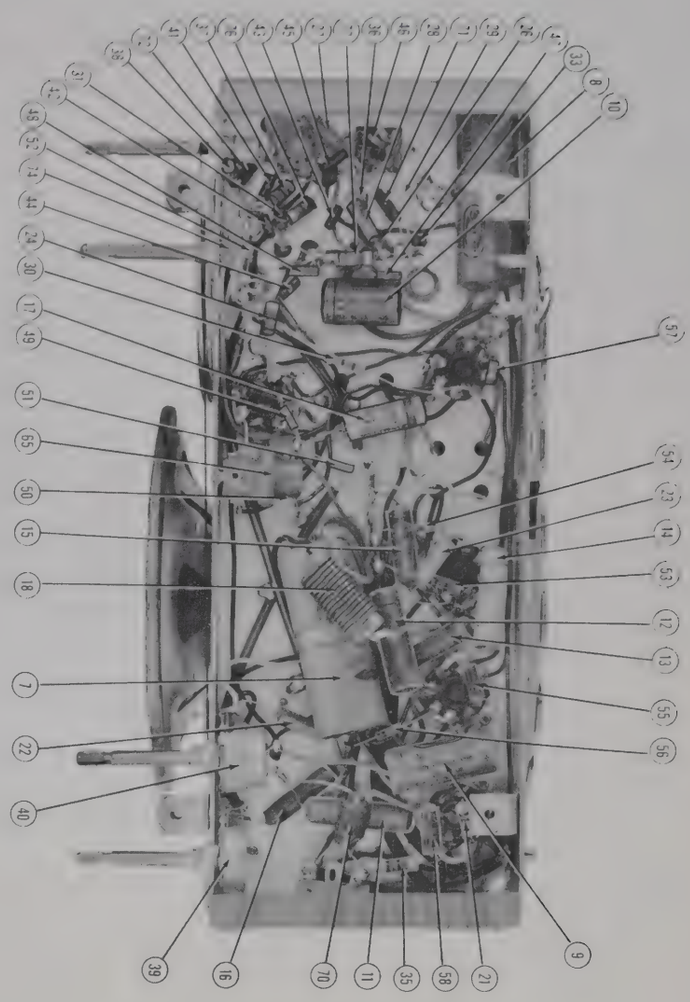
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	OLYMPIC PART No.	JENSEN PART No.		
61	PM	3.5Ω	SK-792	ST-109# Mod. P6-W		#Drill and tap magnet frame.
	CONE DIA.	VC DIA.				
62	6"	3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	OLYMPIC PART No.	MEISSNER PART No.	
63	Loop Ant.	.1Ω	1.2Ω	LP-1122		
64	FM RF Coil		0Ω	CL-1111		
65	AM Osc.Coil	.8Ω	7Ω	CL-1129	14-1040$	$Add 50MMF from osc. grid to high side tuning cap.
66	FM Osc.Coil		0Ω	CL-1113		
67	Input IF AM	20Ω	20Ω	TR-781	16-6658	
68	Output IF "	20Ω		TR-782	16-6670	
69	FM IF	2.9Ω	.5Ω	TR-1123		
70	RF Ant. Clk.	.2Ω	.2Ω	CK-1109		
71	RF Choke	1.3Ω		CK-1127		
72	" "	1.3Ω		CK-1127		

CHASSIS—BOTTOM VIEW



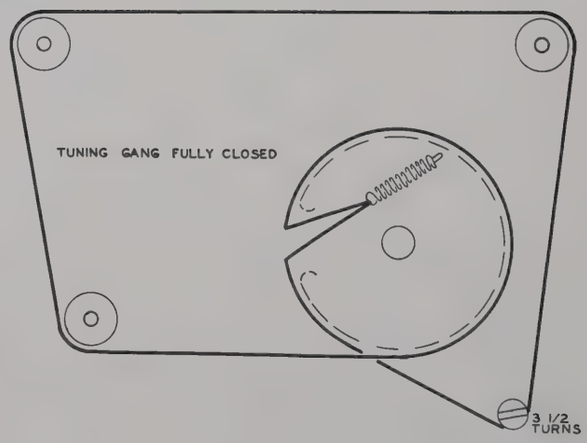
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					OLYMPIC PART No.		
73	Bayonet	6-8	0.15	Brown	BU-187		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
74	Switch	SW-1121	Band
75	2 Gang Var. Cap.	CV-841	(18-500MMF, 35-212 MMF)
A8	Trimmer	CT-1114	FM Osc. Adj.
A9	"	CT-1114	FM Ant. Adj.
	Dial Scale	DL-1115	Glass
	Dial Pointer	PO-334	
	Diffuser	ST-1120	



DIAL CORD DRIVE

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡	1	12AT7	100VDC	37.5VDC	68VDC	12.5VAC	0V.	102VDC	-.35VDC§	0V.	6.25VAC
	2	12SA7	0V.	25VAC	110VDC	110VDC	-10VDC§	0V.	37VAC	-.2VDC	-
	3	12SK7	0V.	49VAC	0V.	-.5VDC	0V.	110VDC	37VAC	110VDC	-
	4	12SQ7	0V.	-.5VDC	0V.	-.5VDC	-.4VDC	57VDC	12.5VAC	25VAC	-
	5	35L6	0V.	86VAC	105VDC	110VDC	0V.	0V.	49VAC	7.6VDC	-
	6	35Z5	0V.	117VAC	113VAC	0V.	113VAC	117VAC	86VAC	120VDC	-

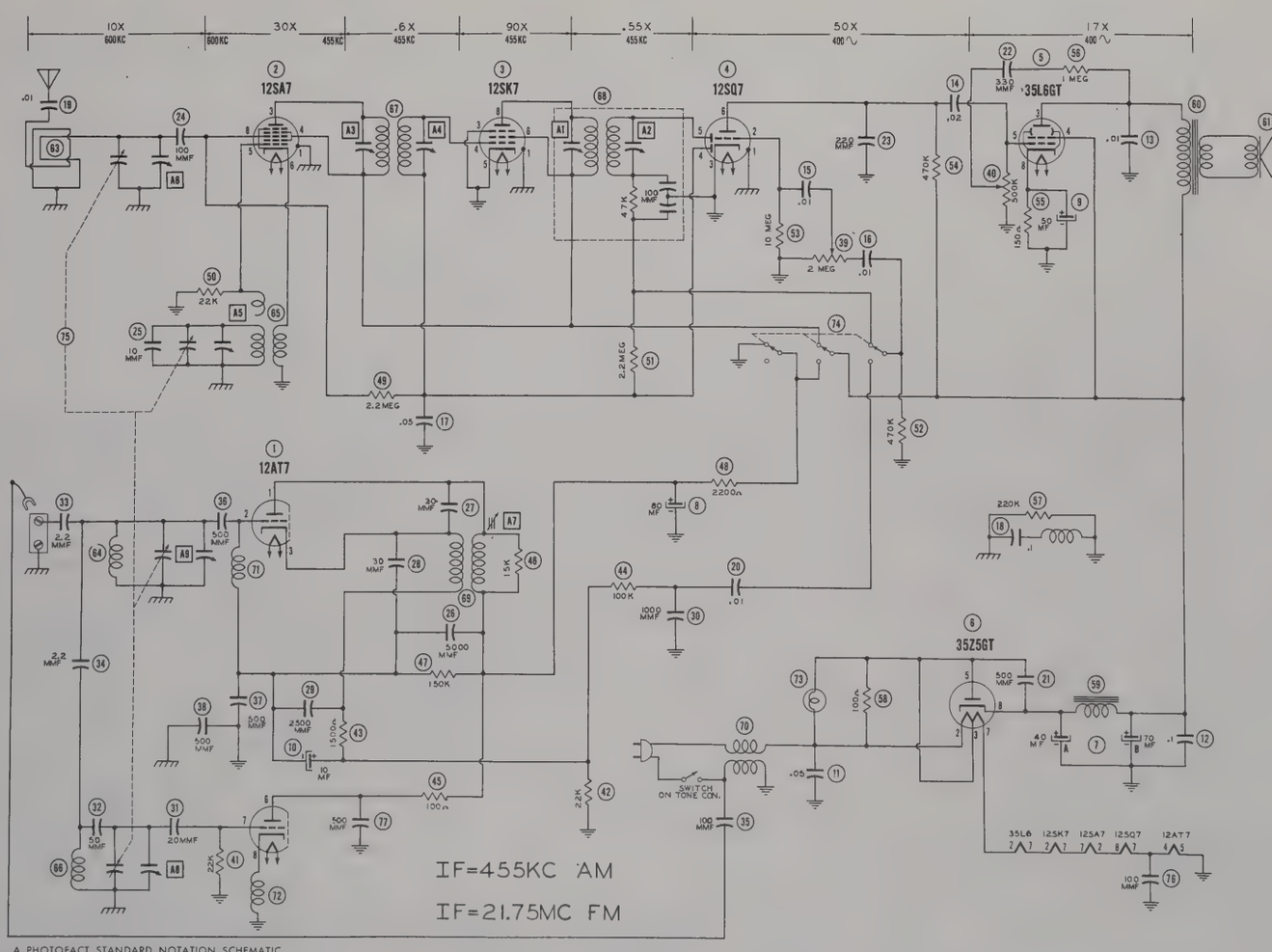
RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡	1	12AT7	32KΩ	180KΩ	20KΩ	10.5Ω	0Ω	32KΩ	20KΩ	1.3Ω	5.25Ω
	2	12SA7	220KΩ	22.5Ω	30KΩ	30KΩ	20KΩ	.8Ω	32Ω	5 Meg.	-
	3	12SK7	220KΩ	.44Ω	0Ω	2.5 Meg.	0Ω	30KΩ	32Ω	30KΩ	-
	4	12SQ7	220KΩ	10 Meg.	0Ω	2.5 Meg.	600KΩ	500KΩ	10.5Ω	22.5Ω	-
	5	35L6	INF.	85Ω	30KΩ	30KΩ	500KΩ	0Ω	44Ω	150Ω	-
	6	35Z5	220KΩ	110Ω	106Ω	INF.	106Ω	110Ω	85Ω	30KΩ	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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482-15

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

PHOTOFACT* Folder

*TRADE MARK

PHILCO MODEL 46-131 (Revised) BATTERY OPERATED

PHILCO MODEL 46-131 (Revised) BATTERY OPERATED

PHILCO MODEL 46-131 (Revised) BATTERY OPERATED

PHILCO MODEL 46-131

TRADE NAME	Philco, Model 46-131 (Revised)
MANUFACTURER	Philco Corp., Tioga and "C" Sts., Philadelphia, Pa.
TYPE SET	Battery Operated Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1LA6 Converter, 1LN5 IF Amp., 1LH4 Det.-AVC-AF, 1A5GT Power Output
POWER SUPPLY	1.5 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	200MA @ 1.5 Volts DC and 7.3MA @ 90 Volts DC

TUNING RANGE—BROADCAST 540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer 7/8" from left edge of gold dial backplate.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) 1LA6. Low side to chassis.	455KC	Tuning slugs fully out.	Across voice coil	A1,A2, A3	Tighten A3 firmly. Adjust A1, A2 & A3 for maximum output.
2	50MMFD	High side to ext. ant. lead. Low side to chassis.	1620KC	"	"	A4,A5	"
3	50MMFD	"	1400KC	5-11/16" from left edge of gold dial backplate.	"	A6,A7	"
4	50MMFD	"	600KC	Tune for maximum output.	"	A8	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 & 4 until no further improvement can be made.

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DATE 1/48 SET #32 FOLDER #482-16

PARTS LIST AND DESCRIPTIONS

PHILCO MODEL 46-131 (REVISED)
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1LA6	1LA6	7AK	
2	IF Amp.	1LN5	1LN5	7AO	
3	Det.-AVC-AF	1LH4	1LH4	5AG	
4	Power Output	1A5GT	1A5GT	6X	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	10	150	30-2540	M-10-150	UT-121	PRS150-12	BR1215	Filter
6	.004	600	30-4623	S-6-004	TC-24	684-004	DT6D4	Audio Coupling
7	.0015	600	60-1015540⁄	S-6-002	TC-22	684-002	DT6D2	" "
8	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	AVC Filter
9	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
10	500	500		MO.5-35	1FM-35	1468-0005	5W5T5	Output Plate Bypass
11	100	500	60-10105407	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
12	100	500	60-10105407	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Cap.
13	10		60-00105407	MO.5-41	MS-41	1468-00001	5W5Q1	Fixed Trimmer
14	390		30-1220-14					" "
15	100	500	60-10105407	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling
16	150			MO.5-315	1FM-315	1468-00015	5W5T15	Fixed Padder

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	1 Meg.	½	33-5493	D13-137#	M-63-Z#	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch		" "	42	SW-A2	" " " " "

#Use original bushing on shaft to actuate off-on indicator.

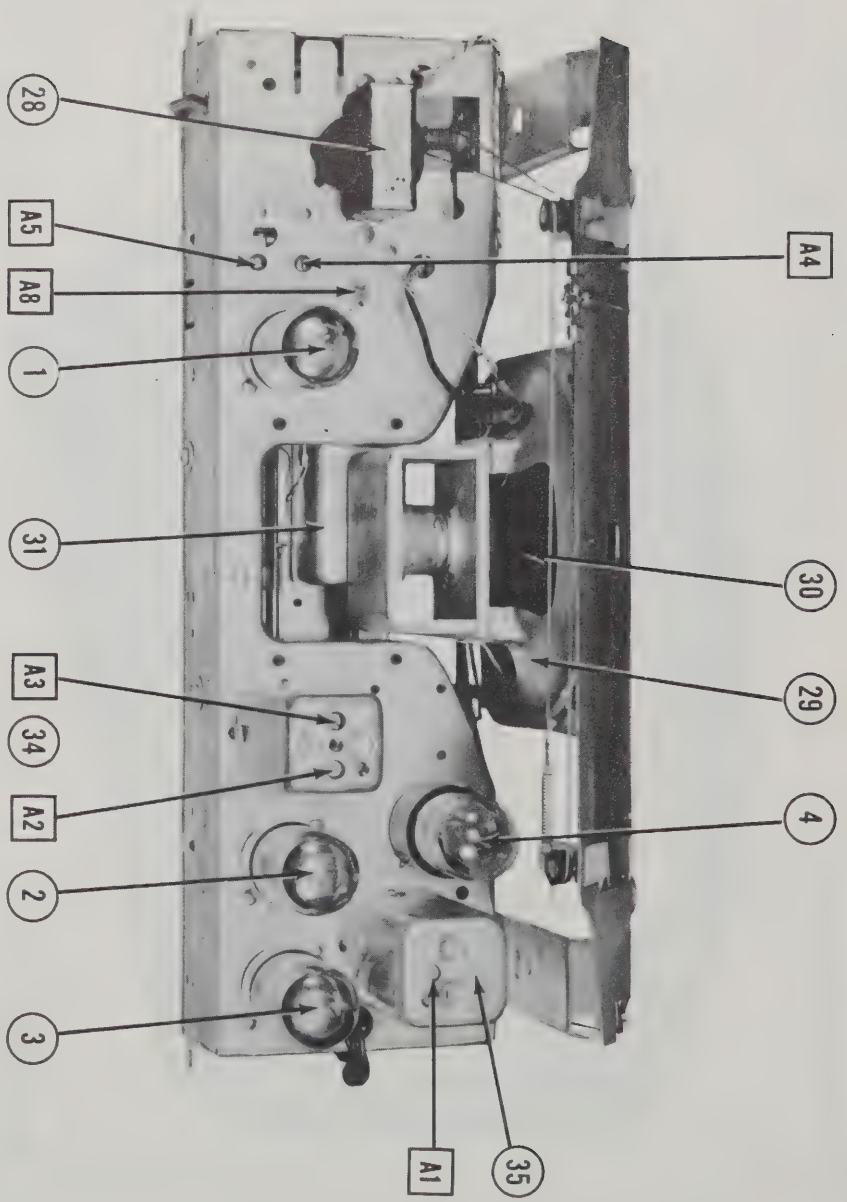
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
18	120KΩ	½	66-4123340	BTS-120K	Br.-Red-Yl. Antenna Loading
19	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
20	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. Oscillator Grid
21	68KΩ	½	66-3683340	BTS-68K	Blue-Gray-Or. Converter Screen Dropping
22	4.7 Meg.	½	66-5473340	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
23	10 Meg.	½	66-6101330	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
24	4.7 Meg.	½	66-5473340	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
25	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
26	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
27	820Ω	½	66-1823340	BTS-820	Gray-Red-Br. Bias

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
28	19000Ω	3.3Ω	700Ω	.3Ω	32-8297	A-3496	T22848	A-2934	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA PHILCO PART No.	JENSEN PART No.		INSTALLATION NOTES
29	FIELD PM	VC IMP. 3.3Ω	36-1507			
30	CONE DIA. 5"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

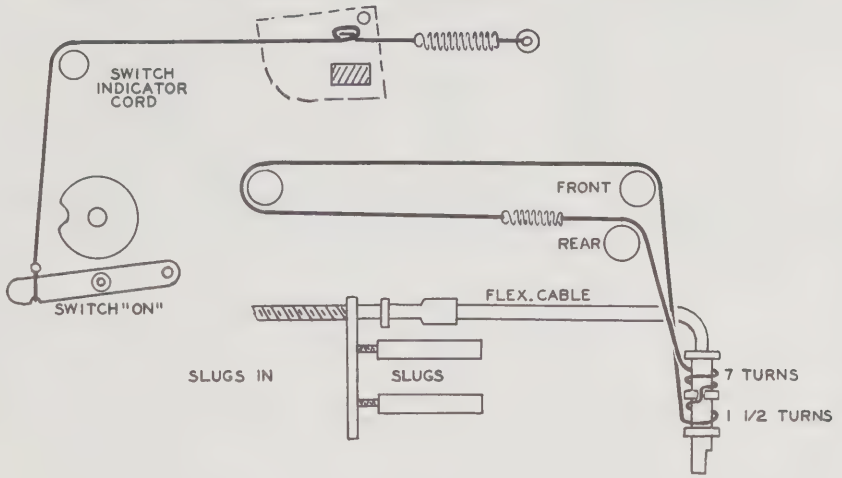
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	MEISSNER PART No.
31	Ant. Coil		16.5Ω	65-0380-1	
32	Osc. Coil		2.5Ω	65-0381-1	
33	Osc. Tracking Coil	5Ω	6.5Ω	32-4092	
34	Input IF	29Ω	30Ω	32-3966	16-6658
35	Output IF	98Ω		32-3897	16-6670

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
36	1.5V "A" 90V "B"	41-8030				

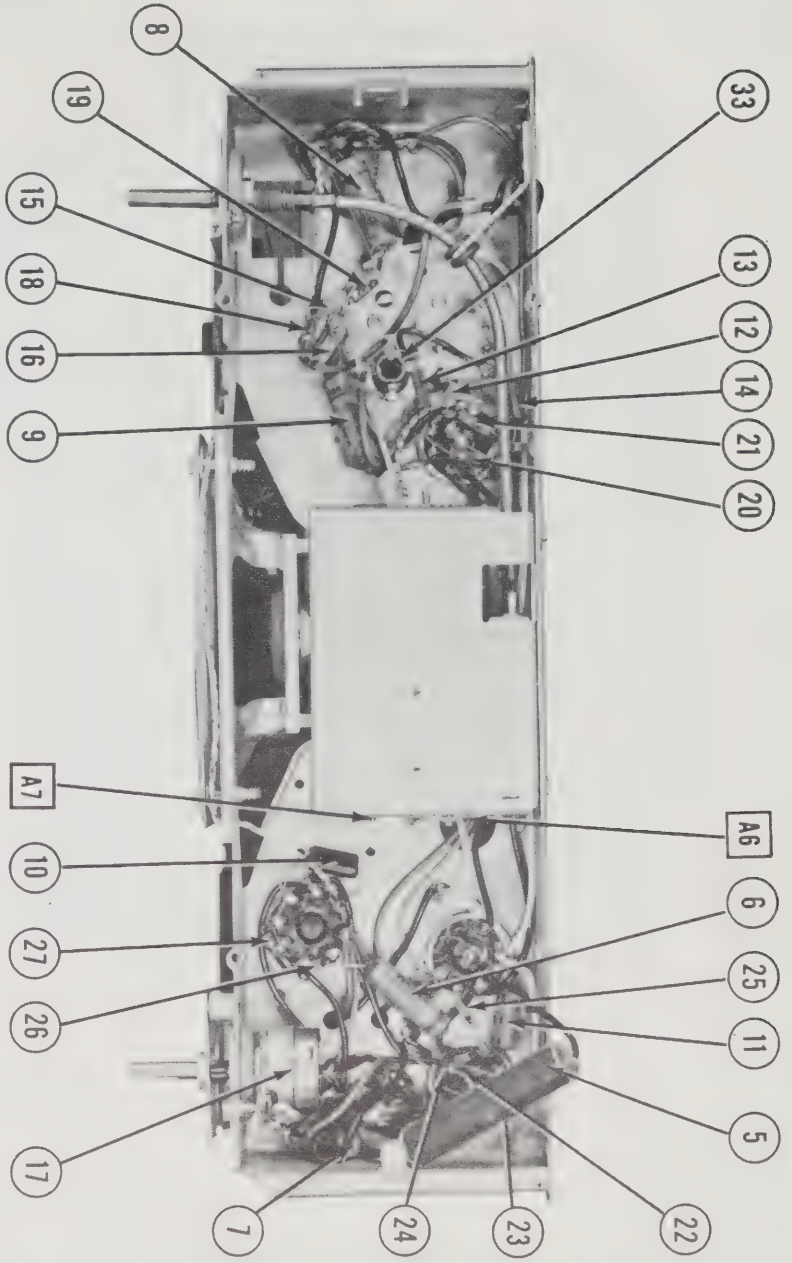
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
A4 A5	Trimmer Strip	31-6391	Osc. Adj. Ant. Adj.



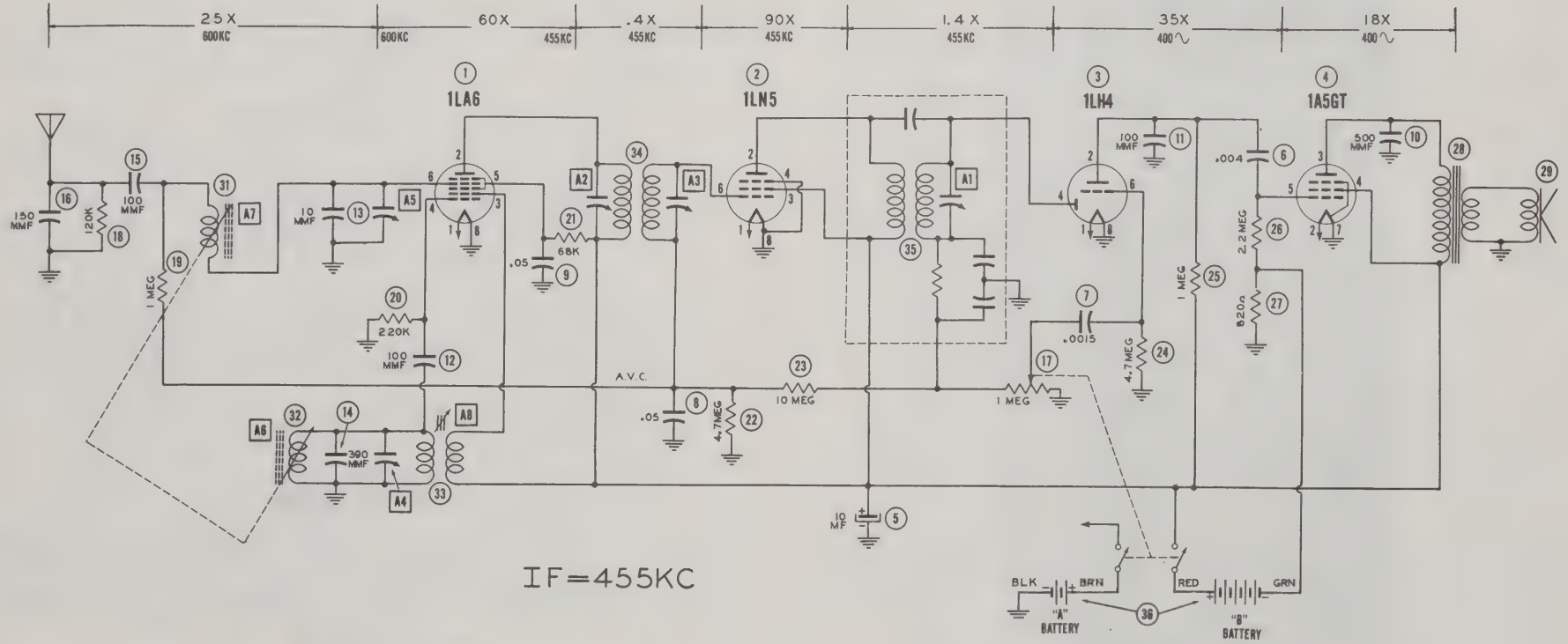
DIAL CORD DRIVES

CHASSIS—BOTTOM VIEW



PHILCO MODEL 46-131 (REVISED) BATTERY OPERATED

PHILCO MODEL 46-131 (REVISED) BATTERY OPERATED



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6*	1.4VDC	85VDC	85VDC	-7.5VDC§	37.5VDC	0V.	85VDC	0V.
2	1LN5	1.4VDC	85VDC	85VDC	0V.	0V.	0V.	0V.	0V.
3	1LH4	1.4VDC	50VDC	0V.	0V.	0V.	0V.	0V.	0V.
4	1A5	0V.	1.4VDC	82VDC	85VDC	-.7VDC	-5.7VDC	0V.	0V.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	*	250KΩ	250KΩ	220KΩ	320KΩ	4 Meg.	250KΩ	0Ω
2	1LN5	*	250KΩ	250KΩ	0Ω	INF.	3.5 Meg.	3.5 Meg.	0Ω
3	1LH4	*	1.2 Meg.	3.5 Meg.	1 Meg.	1 Meg.	5 Meg.	INF.	0Ω
4	1A5	0Ω	*	250KΩ	250KΩ	2.5 Meg.	750Ω	0Ω	0Ω

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

482-16

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many varibles into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

PHILCO MODELS 48-250, 48-250-I

PHILCO MODELS 48-250, 48-250-I

PHILCO MODELS 48-250, 48-250-I

PHILCO MODEL 48-250-I

TRADE NAME	Philco, Models 48-250, 48-250-I
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 7A8 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 50A5 or 50B5 Power Output, 35Z5GT or 35Y4 Rectifier
POWER SUPPLY	105-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer 2-1/8" from left end of dial backplate.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) 7A8. Low side to B-.	455KC	Tuning cap. fully closed	Left hand and center terminal of ant. terminal strip.	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2		Loop	1600KC	6-7/16" from left end of dial backplate	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 1/48 SET #32 FOLDER #482-17

PARTS LIST AND DESCRIPTIONS

PHILCO MODELS 48-250, 48-250-1

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	7A8	7A8	8U	
2	IF Amp.	14A7	14A7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4A	Power Output	50A5	50A5	6AA	
B	" "	50B5	50B5	7BZ	
5A	Rectifier	35Z5GT	35Z5GT	6AD	
B	"	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	20	150		DSB-2x20-150	TA-220	PRSA150-20-20	EZ2215	Filter ‡
B	20	150						"
6A	30	150	30-2573	DSB-403020-150	TA-230	PRSA150-20-30	EZ4225	"
B	25	150						" *
C	20	150			UT-201	PRS150-20		"
7	.04	400	43-3500-2	MPH-4-05	TC-14	484-04	DT4S4	Line Filter
8	.02	400	61-0108	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
9	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
10	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	"
11	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	Screen Bypass
13	.2	400	30-4644					Line Isolation (Special)
14	220		62-122001001	MO.5-32	1FM-32	1468-0002	5W5T2	AF Bypass
15	47		60-00515307	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
37	5		60-90505007	MO.5-55	1FM-55	1468-000005	5W5V5	Ext. Ant. Coupling

‡Use double filter with field coil type speaker.
*Use triple filter with PM type speaker

CONTROLS

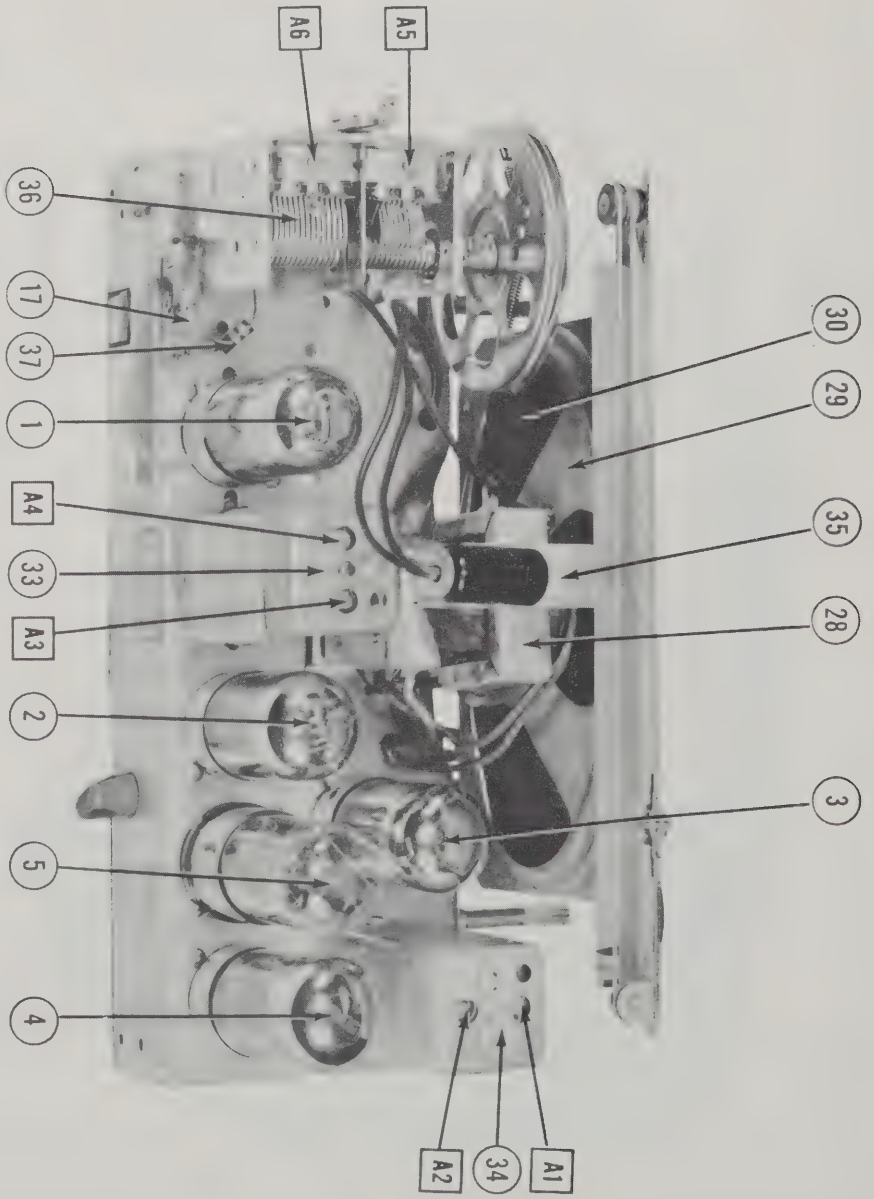
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	500KΩ	½	45-5007	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
17	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Antenna Loading
18	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
19	27KΩ	½	66-3273340	BTS-27K	Red-Vi.-Or. Screen Dropping
20	3.3 Meg.	½	66-5333340	BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
21	470KΩ	½	66-4743340	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
22	470KΩ	½	66-4743340	BTS-470K	Yl.-Vi.-Yl. Output Grid
23	130Ω	½	66-1133340	BW-½-120	Br.-Or.-Br. Output Cathode
24	220Ω	1	66-1224340	BW-1-220	Red-Red-Br. Filter - See Note
25	1200Ω	½	66-21223340	BTS-1200	Br.-Red-Red " - " "
26	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Line Isolation
27	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. AVC Network

Note-Not used in models using speaker with field coil.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
28	2390Ω	3.9Ω	170Ω	.42Ω	Part of 36-1591	A-3876†	T22S45†	A-2928†	†Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PHILCO PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
29	520Ω	3.9Ω	36-1591			
	CONE DIA.	VC DIA.				
30	4"x6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

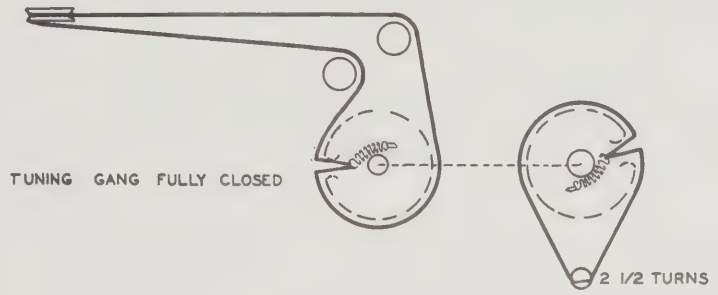
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
31	Loop Ant.		3.5Ω	32-4052-4		
32	Osc. Coil	2.5Ω	7.5Ω	32-3880	14-1040	
33	Input IF	25Ω	25Ω	32-3968	16-6658	
34	Output IF	23Ω		32-3974	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO PART No.		
35	Bayonet	6-8	0.15	Brown	34-2068		Type 47

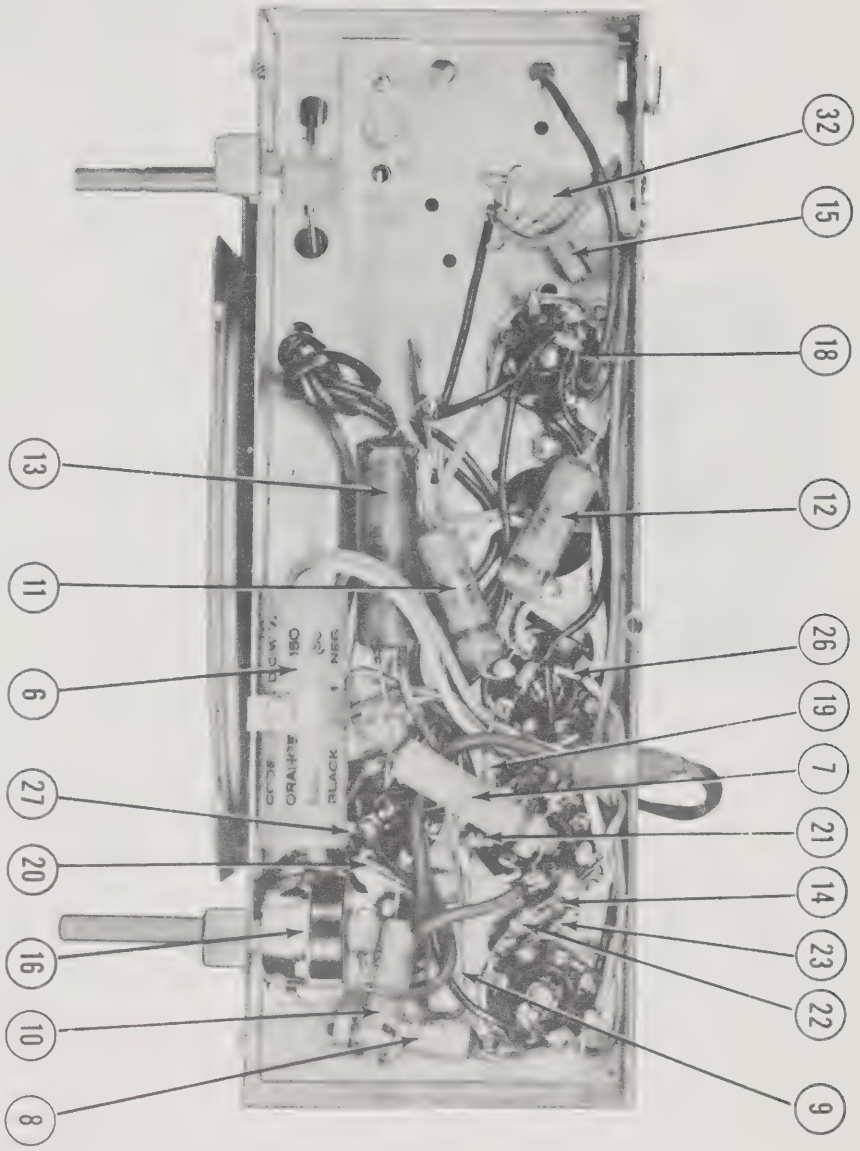
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
36	2 Gang Var.Cap.	31-2527-2	(18-466MMF, 20-175MMF)
	Dial Scale	27-5907	Model 48-250
	" "	27-5908	" 48-250-I
	Knob Assembly	54-4052	" 48-250
	" "	27-4805	" 48-250-I
	Dial Pointer	56-2076-1FCP	



DIAL CORD DRIVE

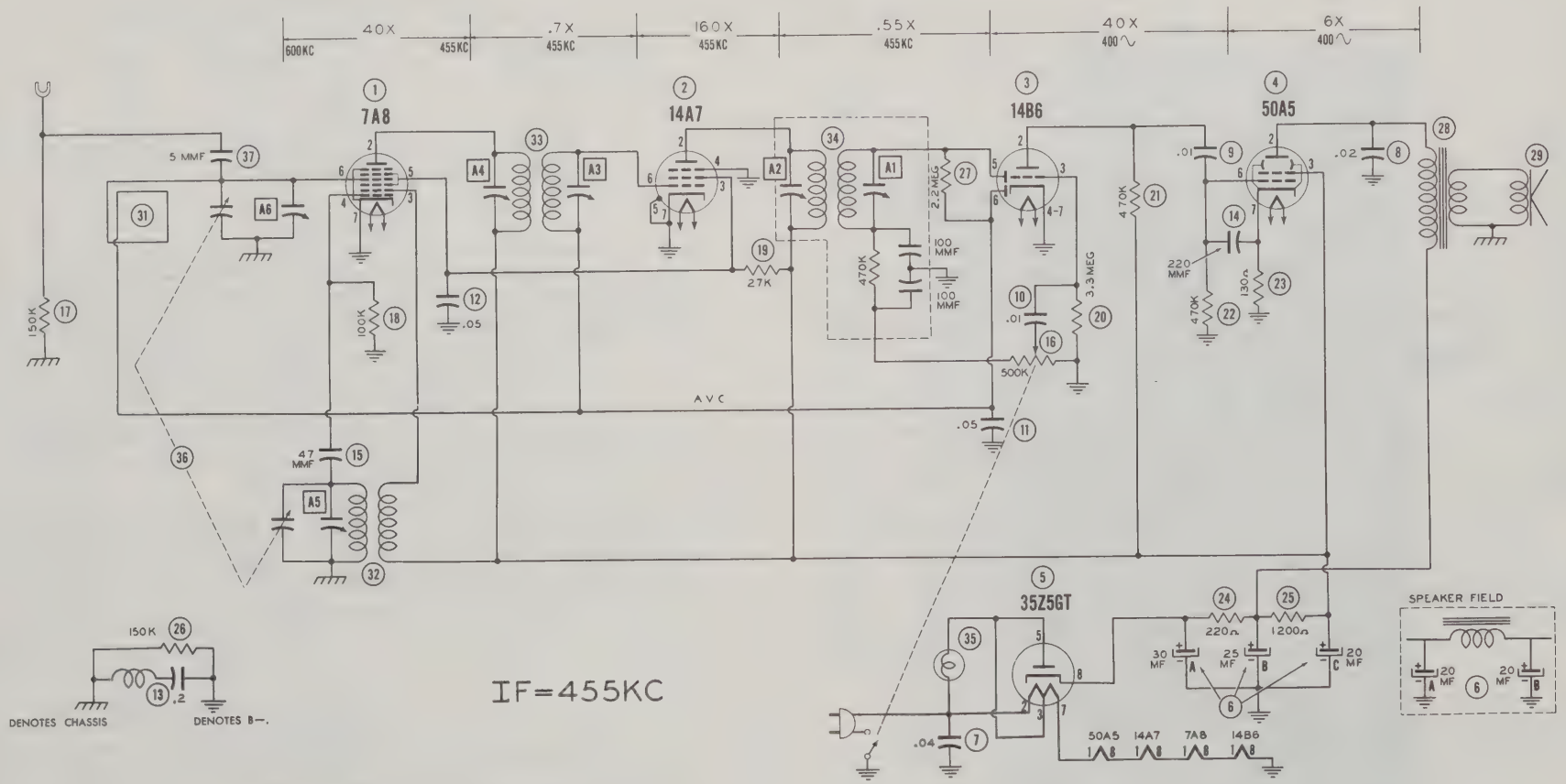
CHASSIS—BOTTOM VIEW



DATE 1/48 SET #32 FOLDER #482-17

PHILCO MODELS 48-250, 48-250-I

PHILCO MODELS 48-250, 48-250-I



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	20VAC	90VDC	90VDC	-13VDC§	44VDC	-.5VDC	0V.	13VAC
2	14A7	33VAC	90VDC	44VDC	0V.	0V.	-.5VDC	0V.	20VAC
3	14B6	13VAC	50VDC	-.65VDC	0V.	-.5VDC	-.5VDC	0V.	0V.
4	50A5	85VAC	80VDC	90VDC	0V.	0V.	0V.	6VDC	33VAC
5	35Z5	0V.	117VAC	115VAC	90VDC	115VAC	90VDC	85VAC	117VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	19Ω	100KΩ	100KΩ	100KΩ	130KΩ	3 Meg.	0Ω	12.5Ω
2	14A7	38Ω	100KΩ	130KΩ	0Ω	0Ω	3 Meg.	0Ω	19Ω
3	14B6	12.5Ω	570KΩ	3 Meg.	0Ω	500KΩ	3 Meg.	0Ω	0Ω
4	50A5	85Ω	100KΩ	100KΩ	INF.	INF.	500KΩ	130Ω	38Ω
5	35Z5	0Ω	120Ω	117Ω	100KΩ	117Ω	100KΩ	85Ω	100KΩ

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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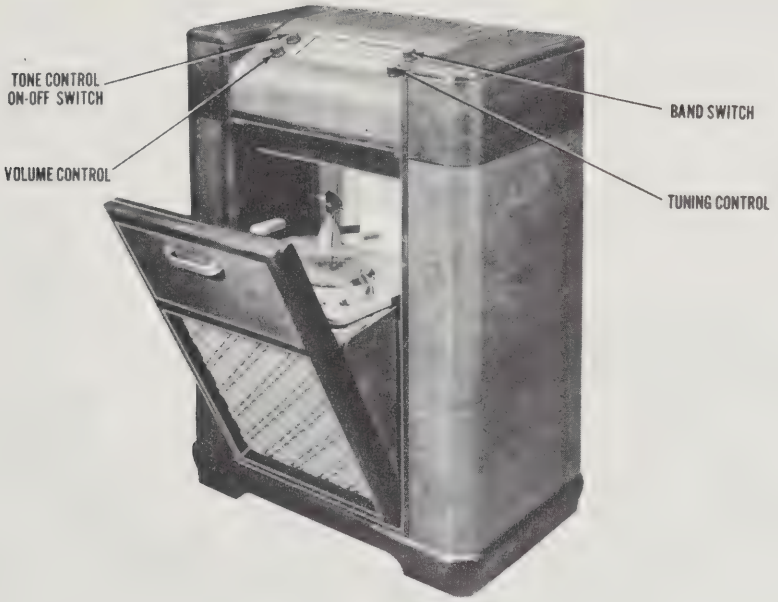
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

482-17

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



PHILCO MODEL 48-1263

TRADE NAME	Philco, Model 48-1263
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC Operated Combination Phono-Radio 2 Band Superheterodyne with Loop Antenna
TUBES (EIGHT)	Types, 7AF7 Converter, 7A7 1st IF Amp., 7A7 2nd IF Amp., 7C6 AF Amp., 6J5GT Phase Inv., (2) 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1720KC
RATING	.75 Amp. @ 117 Volts AC
SHORT WAVE	9.3-15.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed. With receiver in cabinet set pointer to the last reference mark at the low frequency end of the broadcast band. Remove receiver from cabinet and mark the position of the pointer. All measurements in the alignment chart below are taken from this point.

Volume control should be at maximum output, signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to term. "1" of ant term. board. Low side to chassis.	455KC	BC	Tuning capacitor fully closed.	To terminals 2 and 3 of ant. terminal board.	A1,A2, A3,A4.	Adjust for maximum output
2		Loop	580KC	"	15/16" from reference mark at left end of dial backplate.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1700KC	"	6½" from reference mark at left end of dial backplate.	"	A6	"
4		"	1500KC	"	Tune for maximum output.	"	A7	"
5		"	580KC	"	"	"	A5	Rock tuning cap. and adjust for maximum output. Repeat last 4 steps until no further increase can be obtained making Step 4 the final adjustment.
6		"	15MC	SW	6¼" from reference mark at left end of dial backplate.	"	A8	Adjust for maximum output
7		"	"	"	Tune for maximum output.	"	A9	Rock variable and adjust for maximum output.

PHILCO
MODEL 48-1263

PHILCO
MODEL 48-1263

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
1	Converter	7AF7	7AF7	8AC	
2	1st IF Amp.	7A7	7A7	8V	
3	2nd IF Amp.	7A7	7A7	8V	
4	AF Amp.	7C6	7C6	8W	
5	Phase Inv.	6J5GT	6J5GT	6Q	
6	Power Output	6K6GT	6K6GT	7S	
7	Power Output	6K6GT	6K6GT	7S	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

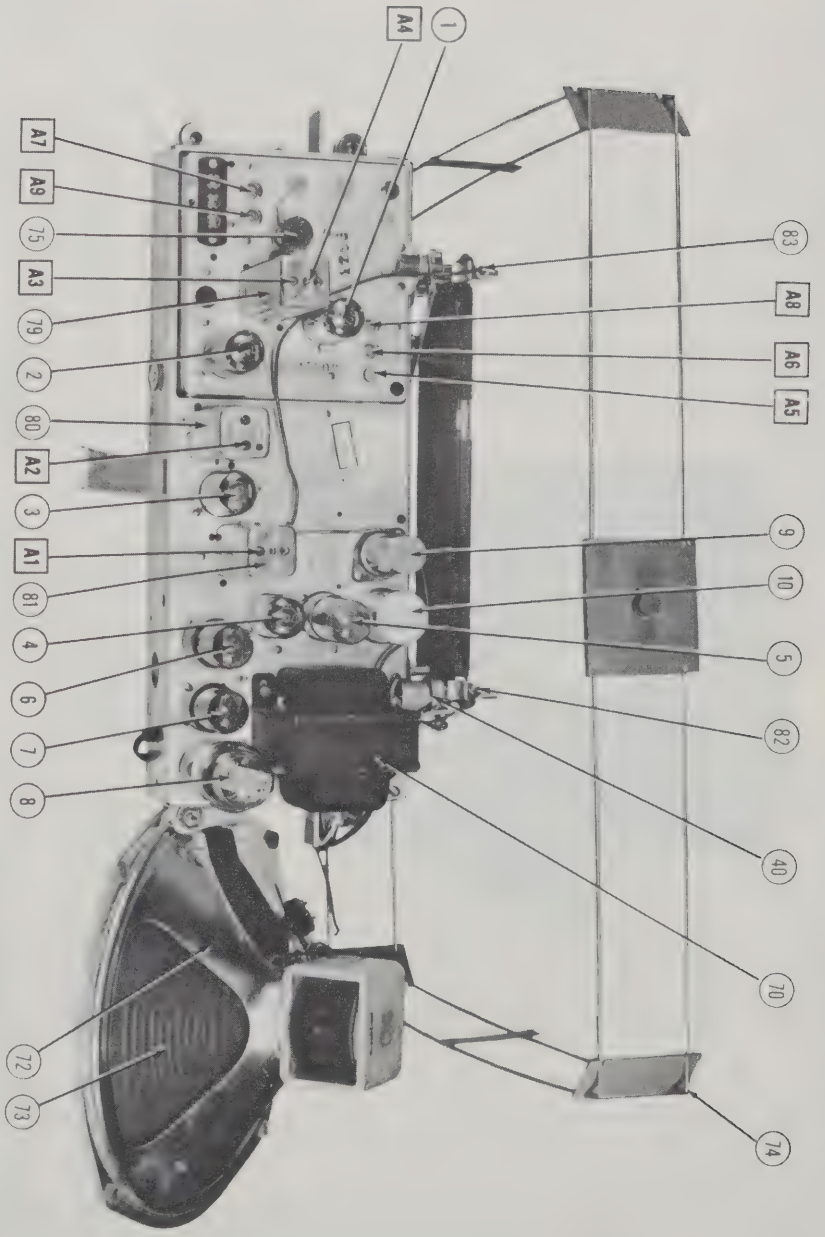
ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
9	20	450	30-2555	DY-20-450	EL-2	AF44J	UP2045	Filter
10A	10	450	30-2556	DY-3x15-450*	EL-344*		UP15D145*	▲ Filter
B	25	450						▲ "
11	.01	600	61-0120	MPH-6-01	TC-11	684-01	DT6S1	Line Filter
12	.01	600	61-0120	S-6-01	TC-11	684-01	DT6S1	" "
13	.003	600	61-0109	S-6-003	TC-23	684-003	DT6D3	Output Plate Bypass
14	.006	400	45-3500-7	S-4-006	TC-26	484-006	DT6D6	Audio Coupling
15	.006	400	45-3500-7	S-4-006	TC-26	484-006	DT6D6	" "
16	.1	200	61-0113	S-4-1	TC-1	484-.1	DT4P1	Bias Filter
17	.006	400	45-3500-7	S-4-006	TC-26	484-006	DT6D6	Audio Coupling
18	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	Tone Comp.
19	.02	600		S-6-02	TC-12	684-02	DT6S2	Audio Coupling
20	.006	400	45-3500-7	S-4-006	TC-26	484-006	DT6D2	" "
21	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	Tone Comp.
22	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	2nd IF Plate Decoup.
23	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	2nd IF Cath. Bypass
24	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	2nd IF Screen Bypass
25	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	1st IF Plate Decoupling
26	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	1st IF Screen Bypass
27	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	AVC Filter
28	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	Conv. Plate Decoup.
29	.006	400	45-3500-7	S-4-006	TC-26	484-006	DT6D6	Osc. RF Coupling
30	.05	200	61-0122					AVC Filter (Special)
31	100		60-10105407	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
32	100		60-10105407	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
33	220		60-10205307	MO.5-325	1FM-325	1468-00025	5W5T25	Osc. Feedback - Cer.
34	100		30-1225-2	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Feedback - "
35	255		30-1220-24					Fixed Padder
36	10		60-00105407	MO.5-41	MS-41	1468-00001	5W5Q1	Feedback
37	255		30-1220-24					Fixed Padder
38	220		60-10205307	MO.5-325	1FM-325	1468-00025	5W5T25	RF Coupling - Cer.
86	100		60-10105407	MO.5-31	1FM-31	1468-0001	5W5T1	Tone Comp. "

*Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	
39A	2 Meg.	½	33-5535-1	D18-139X		Volume Control tapped @ 1 Meg.
B	Shaft		Not Req.	A		Attach to 39A per instruction
40	6 Meg.	½	33-5538-1			Tone Control & Sw.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
41	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. Mixer Grid
42	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Oscillator Grid
43	2200Ω	½	66-2223340	BTS-2200	Red-Red-Red Mixer Cathode
44	33KΩ	½	66-3333340	BTS-33K	Or.-Or.-Or. Oscillator Plate
45	10KΩ	½	66-3103340	BTS-10K	Br.-Blk.-Or. Mixer Plate Decoupling
46	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
47	150Ω	½	66-1153340	BW-½-150	Br.-Grn.-Br. 1st IF Cathode
48	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. 1st IF Screen Dropping
49	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. 1st IF Screen Bleeder
50	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
51	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. 2nd IF Screen Dropping
52	180Ω	½	66-1183340	BW-½-180	Br.-Gray-Br. 2nd IF Cathode
53	3300Ω	½	66-2333340	BTS-3300	Or.-Or.-Red 2nd IF Plate Decoupling
54	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. Diode Load
55	470KΩ	½	66-4743340	BTS-470K	Yl.-Vi.-Yl. Phono Shunt
56	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AF Plate Load
57	10 Meg.	½	66-6103340	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
58	33KΩ	½	66-3333340	BTS-33K	Or.-Or.-Or. Tone Compensation
59	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. Phase Inverter Grid
60	4700Ω	½	66-2473340	BTS-4700	Yl.-Vi.-Red Phase Inverter Cathode
61	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Phase Inverter Cathode
62	56KΩ	½	66-3563340	BTS-56K	Grn.-Blue-Or. Phase Inverter Plate Load
63	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. Output Grid
64	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. Output Grid
65	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Bias Filter
66	5.1Ω	½		BW-½-4.7	Grn.-Br.-Gold Feedback
67	68Ω	½	66-0683340	BW-½-68	Blue-Gray-Blk. "
68	15KΩ	2	66-3153340	BT-2-15K	Br.-Grn.-Or. Filter
69	165Ω	10	33-3435-1		Bias

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDARSON PART No.	REPLACEMENT DATA MERIT PART No.
70	117V AC @ .75A	640V CT @ .112A	5.0V AC @ 2.0A	6.5V AC @ 2.2A SEC. 4 6.6V CT @ .6A	32-8248	P-4080†	T22R32†	P-3153†

†Drill new mounting holes.

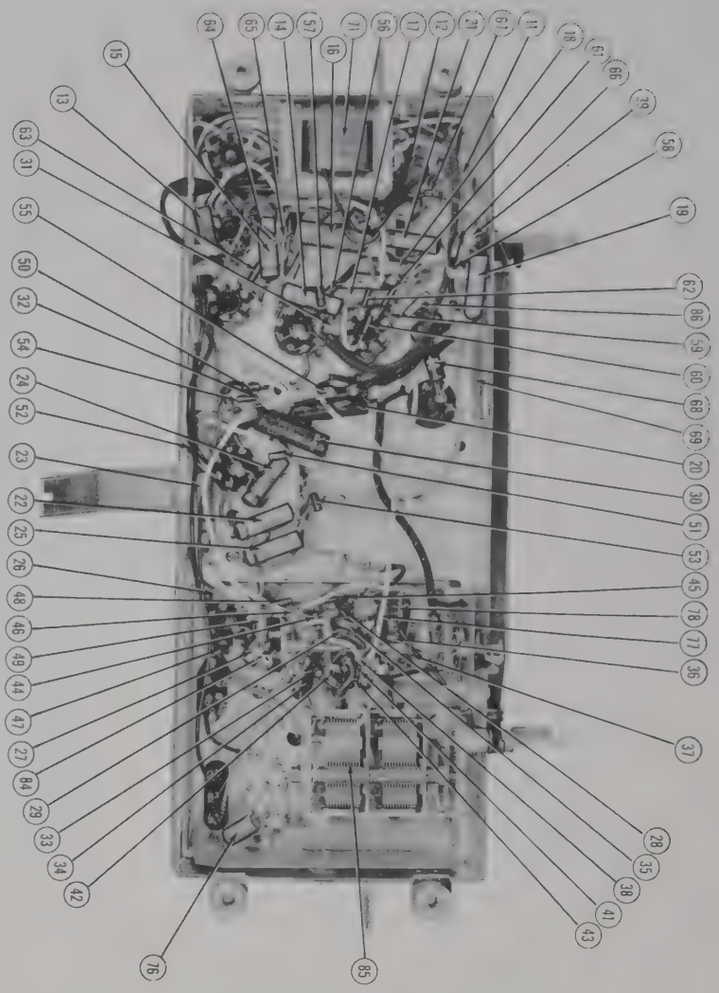
TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
71	12000Ω CT	5.3Ω	580Ω CT	.5Ω	32-8274	A-3824	T22S56	A-2936‡	‡Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.				
72	680Ω	5.3Ω	36-1595			
	CONE DIA.	VC DIA.				
73	11½"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

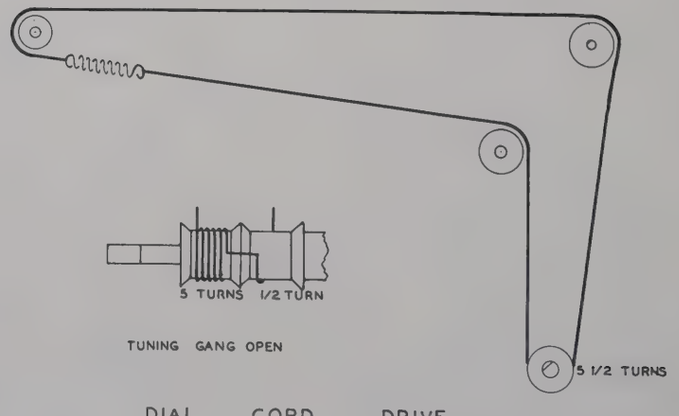
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA MEISSNER PART No.
74	Loop Ant.		.1Ω	76-1889-2	
75	BC Ant.Coil		1.5Ω	32-4033-1	
76	SW Ant.Coil		.1Ω	32-4050-6	
77	BC Osc.Coil		3Ω	32-4019-2	14-1040
78	SW " "		.1Ω	32-4113	
79	1st IF	1.5Ω	19.5Ω	32-3956-3	16-6659
80	2nd IF	8.1Ω	20.8Ω	32-3957-3	16-6659
81	3rd IF	50.1Ω		32-3955-3	16-6670

DIAL LIGHT

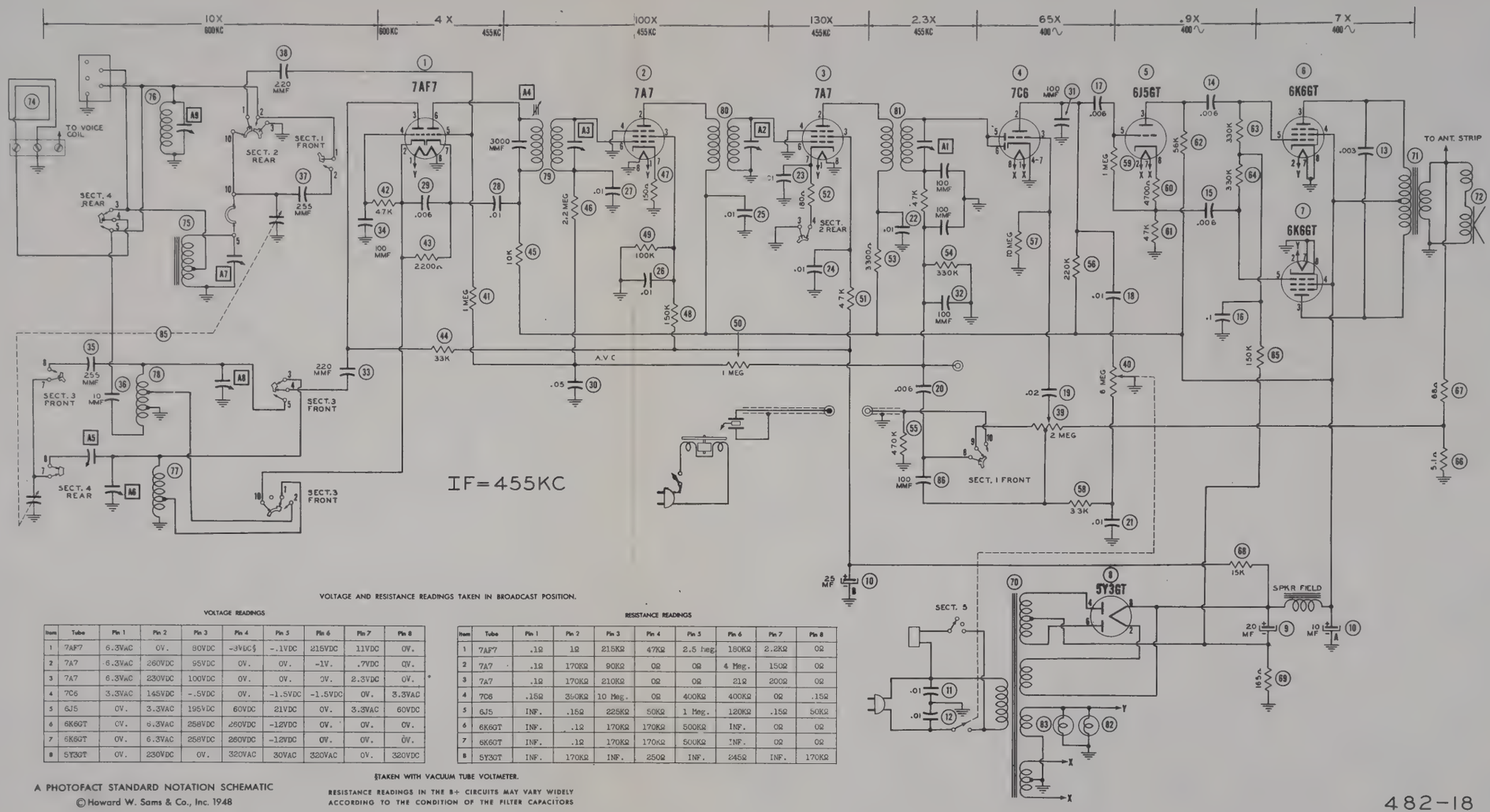
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.		INSTALLATION NOTES
82	Bayonet	7.5	0.2	White	34-2040		Type 51
83	"	7.5	0.2	White	34-2040		" "

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
84	Switch	42-1813	Band
85	2 Gang Var. Cap.	31-2719	(17-526 MMF) each section
A7	Trimmer Strip	31-6476-4	BC Ant. Adj.
A9			SW " "
A5	Trimmer Strip	31-6464	BC Osc. Pad.
A6			" " Adj.
A8			SW " "
	Dial Pointer	56-3179	
	Knob	54-4376	
	Dial Scale	76-3187	Includes backplate.



DIAL CORD DRIVE



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7AF7	6.3VAC	0V.	80VDC	-3VDC§	-.1VDC	215VDC	11VDC	0V.
2	7A7	6.3VAC	260VDC	95VDC	0V.	0V.	-1V.	.7VDC	0V.
3	7A7	6.3VAC	230VDC	100VDC	0V.	0V.	0V.	2.3VDC	0V.
4	7C6	3.3VAC	145VDC	-.5VDC	0V.	-1.5VDC	-1.5VDC	0V.	3.3VAC
5	6J5	0V.	3.3VAC	195VDC	60VDC	21VDC	0V.	3.3VAC	60VDC
6	6K6GT	0V.	6.3VAC	258VDC	260VDC	-12VDC	0V.	0V.	0V.
7	6K6GT	0V.	6.3VAC	258VDC	260VDC	-12VDC	0V.	0V.	0V.
8	5Y3GT	0V.	230VDC	0V.	320VAC	30VAC	320VAC	0V.	320VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7AF7	.1Ω	1Ω	215KΩ	47KΩ	2.5 Meg.	180KΩ	2.2KΩ	0Ω
2	7A7	.1Ω	170KΩ	90KΩ	0Ω	0Ω	4 Meg.	150Ω	0Ω
3	7A7	.1Ω	170KΩ	210KΩ	0Ω	0Ω	2IΩ	200Ω	0Ω
4	7C6	.15Ω	360KΩ	10 Meg.	0Ω	400KΩ	400KΩ	0Ω	.15Ω
5	6J5	INF.	.15Ω	225KΩ	50KΩ	1 Meg.	120KΩ	.15Ω	50KΩ
6	6K6GT	INF.	.1Ω	170KΩ	170KΩ	500KΩ	INF.	0Ω	0Ω
7	6K6GT	INF.	.1Ω	170KΩ	170KΩ	500KΩ	INF.	0Ω	0Ω
8	5Y3GT	INF.	170KΩ	INF.	250Ω	INF.	245Ω	INF.	170KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

TOP VIEW

GENERAL INFORMATION

This changer is of a three-post, automatic, intermixing type. It is designed to play either 10- or 12-inch records, in any order, up to a total of 12 records. The changer will shut off automatically at the completion of the last record. Manual operation is provided for playing non-standard and home recordings.

Manufactured by

J. P. SEEBURG CORPORATION

1500-24 Dayton Street, Chicago 22, Illinois

At the time this material was submitted to the printer, the Model "M" had just been introduced to the field. We, therefore, are unable to compile an accurate list of the users, etc., for inclusion here.

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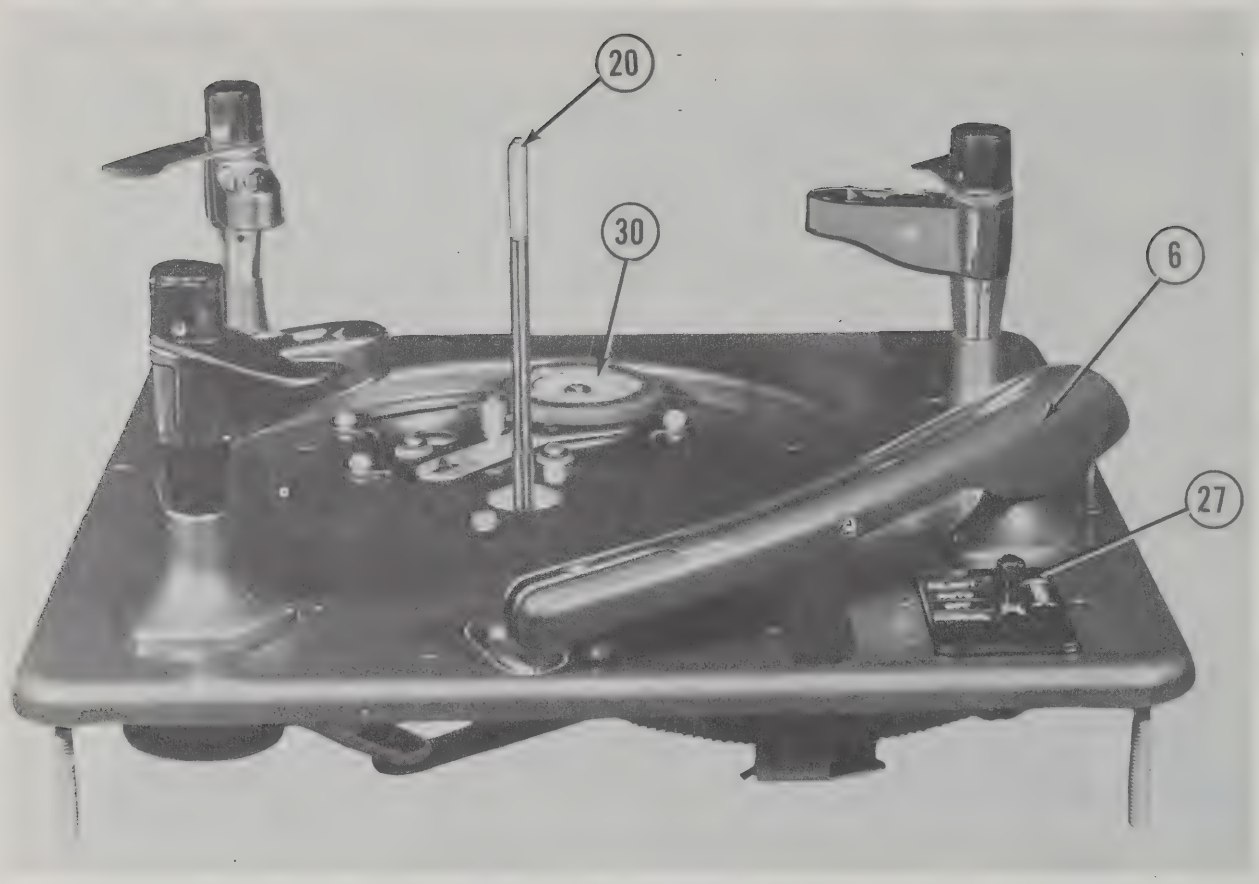


TOP VIEW LESS TURNTABLE

LUBRICATION

Lubrication applied at the time of manufacture is usually sufficient for several years of normal operation. If, after a prolonged period, lubrication becomes necessary, it is recommended to use:

A. Light oil
   1. All shafts
   2. Spindle bearings

B. Grease, if necessary
   1. Cam surfaces and gear teeth

C. Do not lubricate
   1. Clutch engagement lever
   2. Idler wheel rim and turntable rim
   3. Moving parts on the selector arms and posts

Wipe off all excess lubricant; over lubrication is dangerous.

AUTOMATIC OPERATION

1. Place either 10″ or 12″ records, in any order up to twelve records, on the selector arms.

2. Move the control button to the "reject" position and release it. The button will return to the "Auto" position. The changer will now play the entire stack and, on completion of last record, will automatically shut off.

3. To reject any record, move the control button to "Reject" and release it.

4. The changer may be shut off before all the records have dropped to the turntable by removing all the records above the selector arms; move the control button to "reject" position and release it. The changer will now move the pickup arm out to a locked position, and the control button is moved to the "off" position, thus shutting off the changer.

5. To unload records, turn the selector arms counterclockwise so they will clear the records.

MANUAL OPERATION

Odd-sized, or very old, records and home recordings should be played in "Manual" position:

1. Turn the selector arms counterclockwise to clear the turntable.

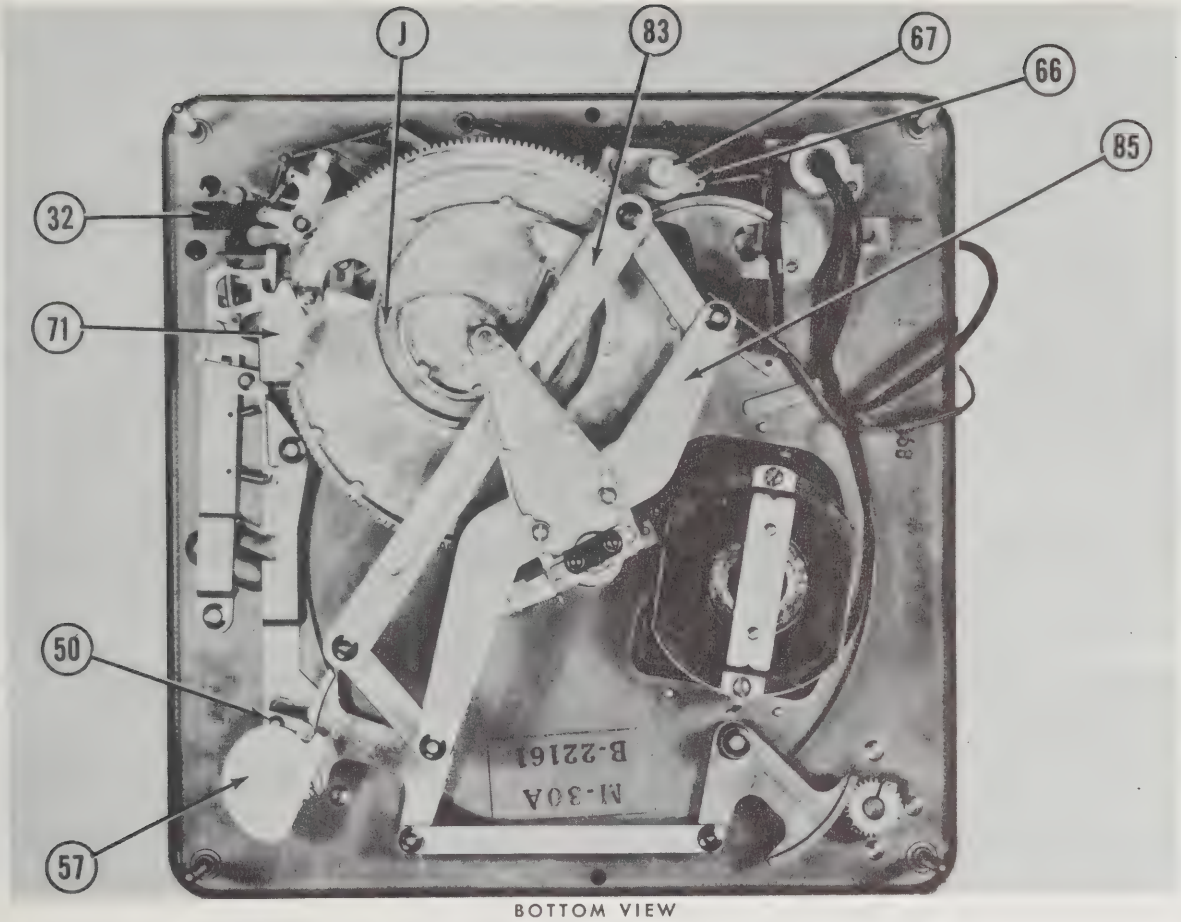
2. Place a record on the turntable.

3. Move the control knob to the "Manual" position.

4. Place the pickup arm on the record.

5. Return pickup arm to its rest position on completion of record.

6. Move control knob to the "Off" position to stop motor.



BOTTOM VIEW

With the control knob in "Manual," the control slide (32) sets up four conditions:

1. The motor switch is on.

2. The end of the control slide partially disengages the pickup arm inner latch (60) from its locked position. This latch now serves as a detent for the pickup arm while in the rest position, and prevents its movement due to accidental bumping.

3. The manual lockout assembly (39) on the control slide prevents the pickup arm locator (52) from moving outward, thereby permitting free movement of the pickup arm by hand.

4. The manual reject lever (48) is pulled back preventing the clutch engagement lever from engaging the pinion gear.

CHANGE CYCLE

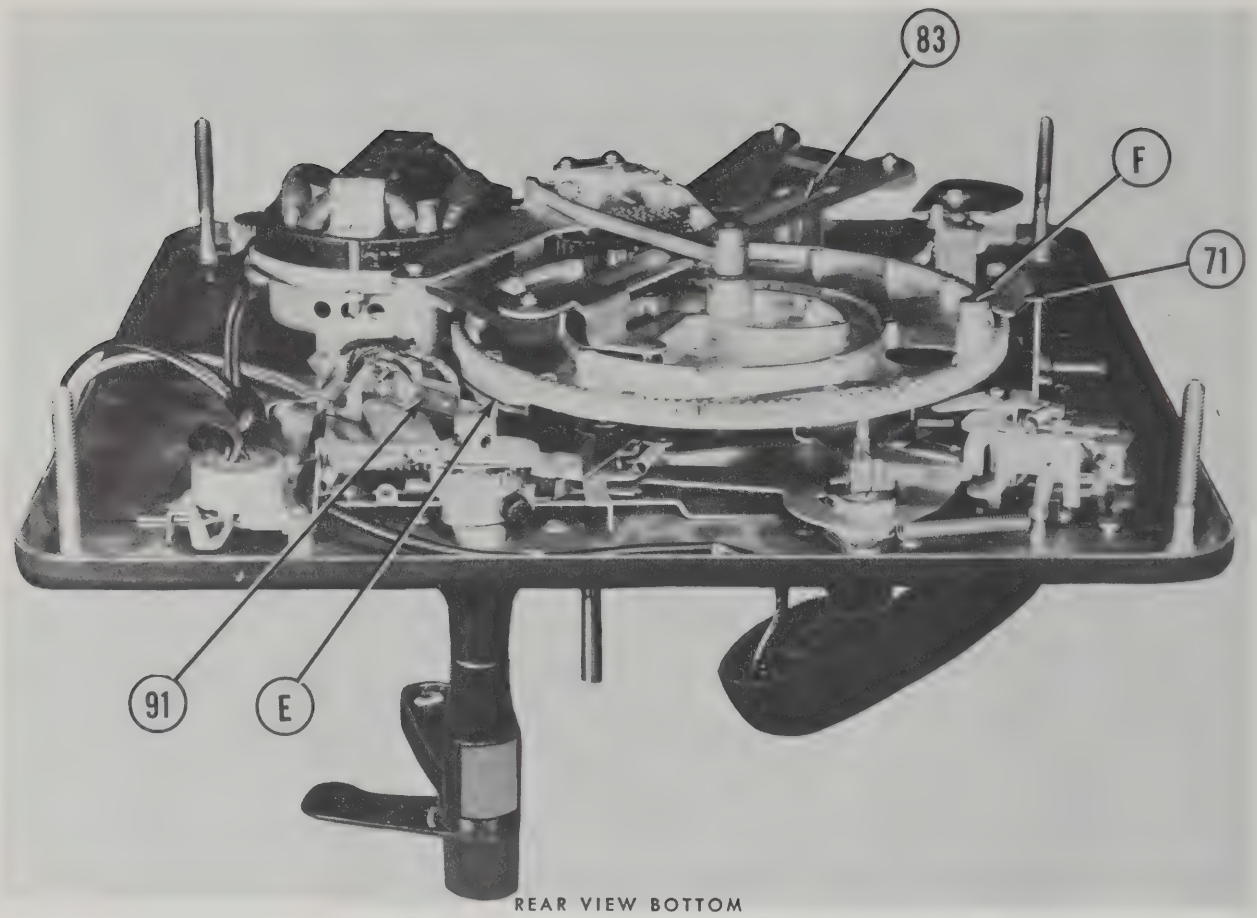
The change cycle may be set in motion by one of three methods:

1. By moving the control knob to "Reject." When the control knob reaches "Reject," the changer is manually "tripped" as follows: The control slide (32) pivots the manual reject lever (48) surface (C) against stud (D) of the trip lever (75). This action causes the release of the clutch engagement lever (77) which drops by gravity. The lug on the rotating pinion gear (86) strikes the clutch lever (77), thus moving the main gear (78) enough to allow its teeth to mesh with the pinion.

2. At the end of a record, minimum diameter cutoff occurs when the trip shoe (70) strikes the trip roller (75A) of the trip lever (75). This should take place at approximately 1⅞" radius on the record.

3. Eccentric groove cutoff occurs when the pickup arm is moved away from the spindle. The sawtooth edge of the trip plate (K) of the pickup arm lever (69) engages and moves the trip dog of the trip lever (75) causing the trip lever to move, releasing the clutch engagement lever (77), which drops by gravity. This trip operates at all positions of the pickup arm, after it has played approximately half of the record.

A lug on the rotating pinion gear (86) strikes the clutch lever (77) causing the main gear (78) to turn and mesh with the pinion gear. As the drive gear rotates, the muting switch blade (91) leaves cam (E) and shorts out the pickup lead during the remainder of the change cycle. Stud (F) on the bottom of the



REAR VIEW BOTTOM

main cam moves away from the shut-off arm (71) allowing the shut-off arm to pivot inward by the tension of spring (72).

The lift pin (22A) rides up the inclined surface of the main cam, thus raising the pickup arm from the record. The cam surface (H) of the main gear contacts the roller (G) of the lever (69) moving the lever out to a latched position with the pickup arm inner latch (60), thus moving the pickup arm to latch position clear of the records.

The roller (82), riding in cam (J) on the bottom of the main gear, actuates the drive link (83) causing the selector arms to rotate a quarter turn to release a record. The motion of the drive link is transmitted to the selector arms through the following parts: Segments No. 1 (79), No. 2 (64), No. 3 (81), segment link (84), post gears No. 1 (51), No. 2 (63), No. 3 (80), and selector arm shafts No. 1 (25A), No. 2 (23A), and No. 3 (29). All of the parts operate as a unit. The three selector arms are always in synchronism whether operated through the drive link (83) or manually.

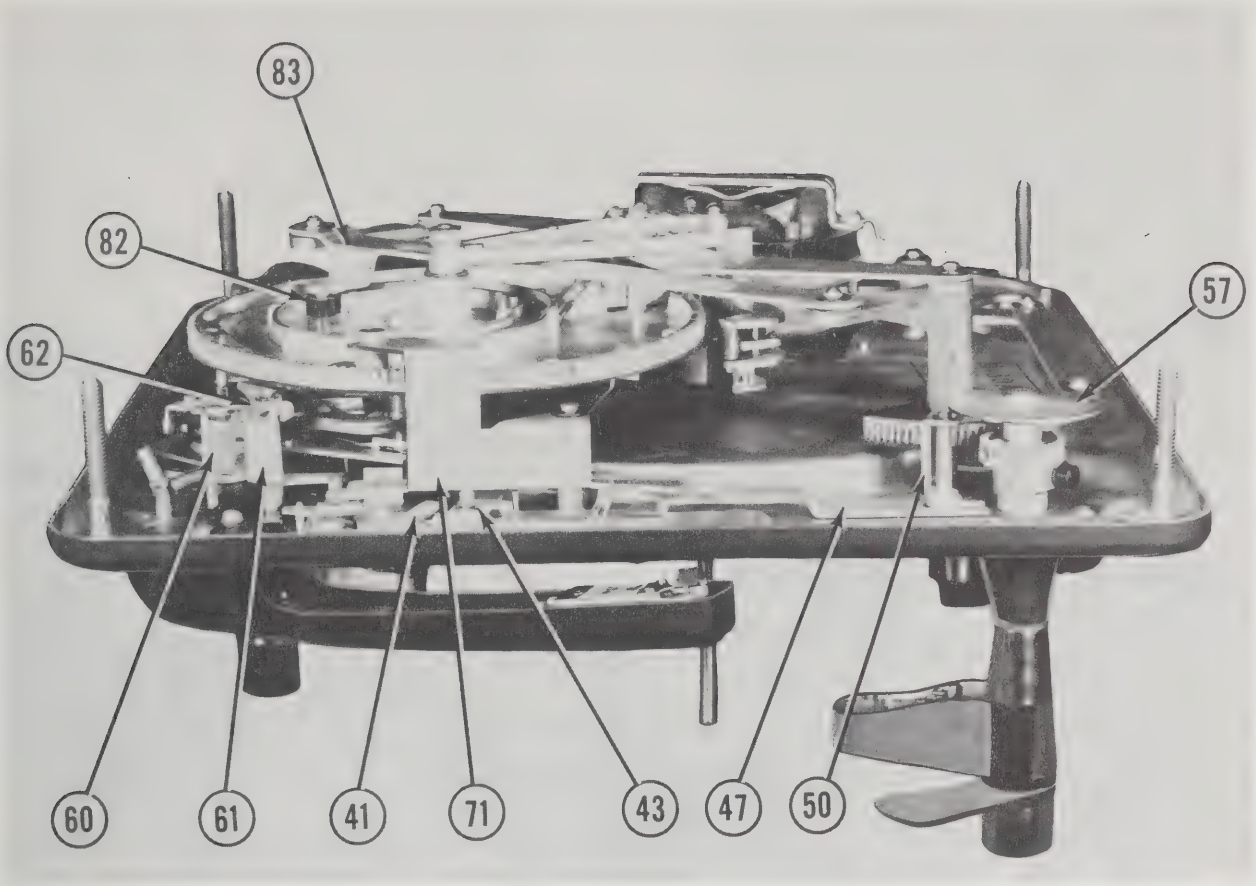
The clutch engagement lever (77) comes in contact with surface (L) of the pickup arm lever (69), thereby resetting the trip by latching the clutch engagement lever (77) to trip lever (75).

Cam (J) on the bottom of the main cam now reverses the direction of the drive link (83) returning the selector arms to their original position.

Cam surface (E) contacts the pickup arm outer latch (62) so as to unlatch the pickup arm lever (69) from the pickup arm inner latch (60). The pickup arm locator (52) pushes against the pickup arm lever through the action of spring (49). Therefore, stud (G) of the pickup arm lever follows the receding cam surface (H) of the main cam (78), thus moving the pickup arm lever and the pickup arm in toward the record.

The presence of a 10-inch or 12-inch record on the selector arms determines the point at which the pickup arm locator (52) contacts the 10-inch and 12-inch set lever (54), which positions the pickup arm for set-down.

As the stud (G) of the pickup arm lever leaves cam (H) of the main cam, it contacts the pickup arm retard lever (73) which holds the pickup arm lever and pickup arm in position during the time of lowering the pickup arm to the record. The lift pin (22A) rides down the incline and lowers the pickup arm to the record. The booster spring (56) exerts a



BOTTOM VIEW LEFT SIDE

slight pressure against the pickup arm lever (69), causing the needle to enter the starting groove.

Cam (F) on the bottom of the main cam contacts the shut-off arm (71) moving it out.

The retard lever (73) leaves the stud (G) of the pickup arm lever, giving the pickup arm free movement on the record.

Cam (E) engages the muting switch blade (91) and restores pickup lead circuit to normal position.

The drive gear now completes its rotation and is locked in open-tooth position by the drive gear stop lever (88) in the detent in cam (M) of the main gear.

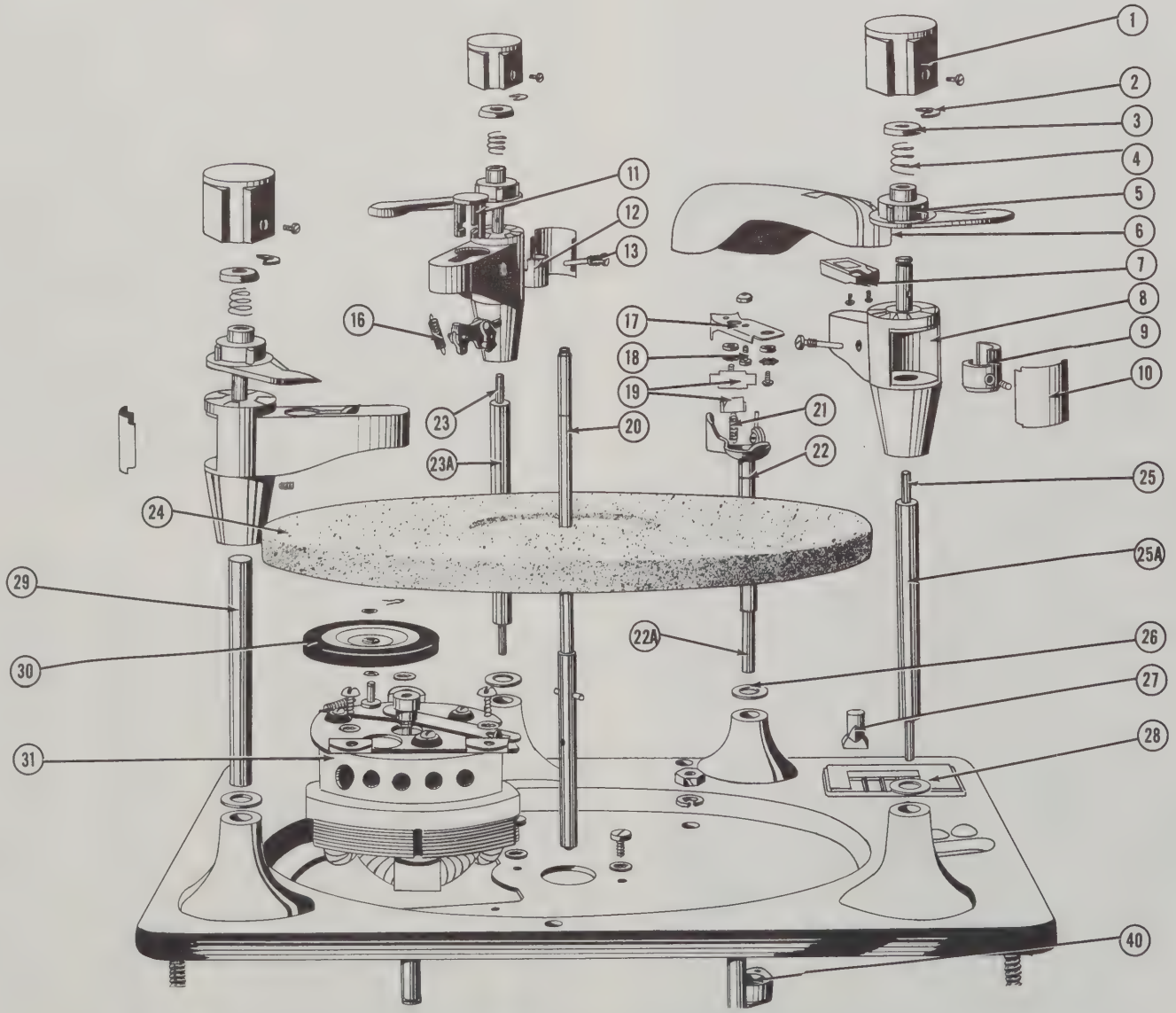
INTERMIXING ACTION

All three selector arms serve as a support to the records and also work as a group in separating the records and dropping them to the turntable. In case the stack of records on the selector arms is entirely 10-inch records, the post link shoes will contact the edge of each record in succession and will be pushed back as the selector arms are actuated. The leading edges of the selector blades move in between the bottom two records holding the records above the selector blades while the bottom record drops to the turntable. As the selector arms are reversed in motion, the records are lowered to a rest position on the selector arm.

In case the stack of records is 12″, the post link shoes will be depressed flush with the surface of the arms by the weight of the records. The selector blades (5) contact the edge of the record and are carried upward to the thickness of the record, thus dividing the bottom two records and dropping the bottom record to the turntable.

When intermixing records and a 12-inch record is below a 10-inch, the selector blades strike the edge of the record and raise upward to the thickness of the 12-inch record, and the leading edges pass under the 10-inch record, holding the remaining records while the 12-inch record drops to the turntable.

When a 12-inch record follows a 10-inch record, the post link shoes will be pressed back causing the plungers (11) to raise; therefore, the plungers contact the 12-inch record raising it. It is necessary to raise the 12-inch record to allow for the fact that the 10-inch record is thinner. The selector blades now enter into a clear space between the 10-inch and 12-inch records, separating them and dropping the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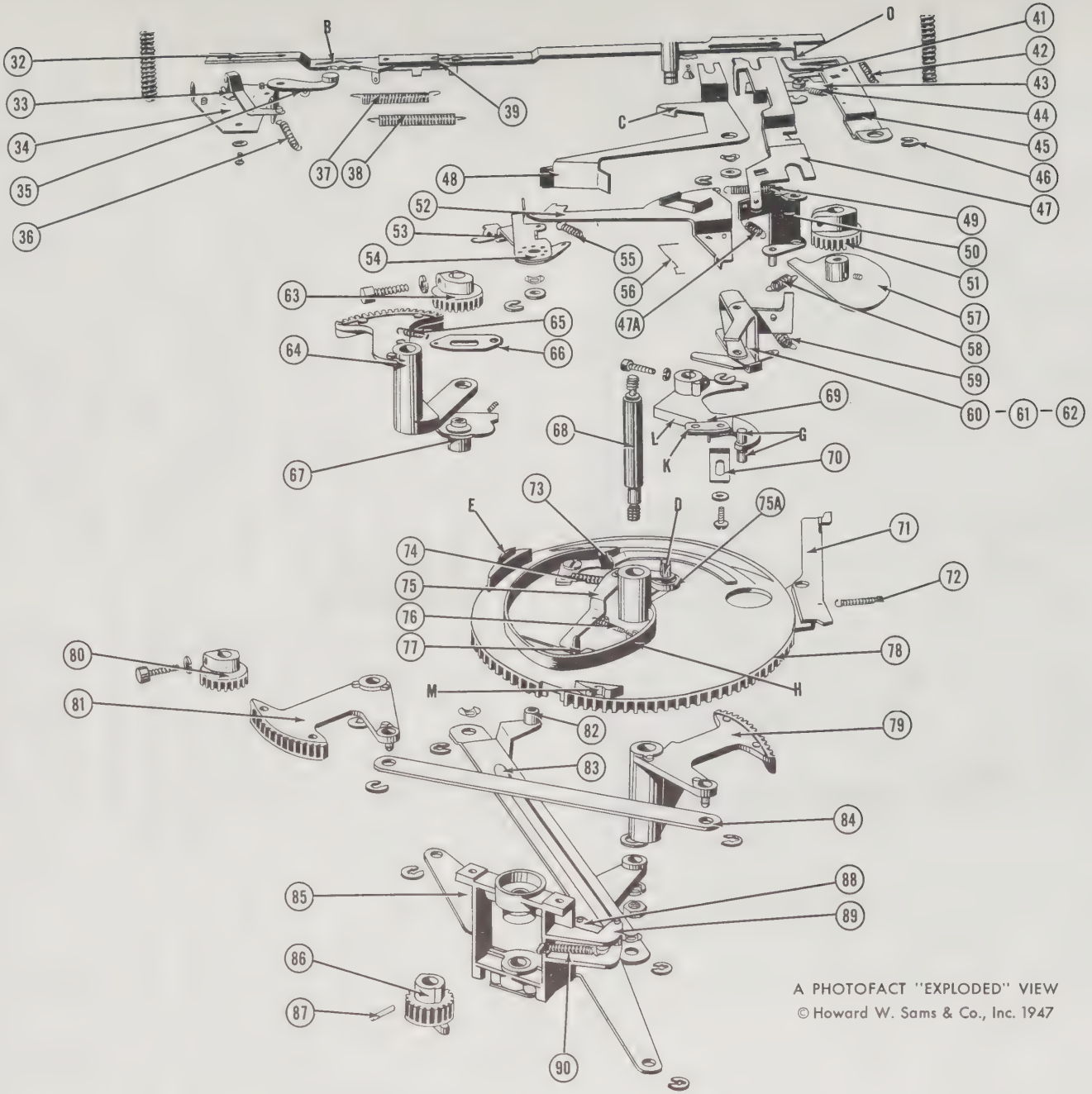
A PHOTOFACT "EXPLODED" VIEW
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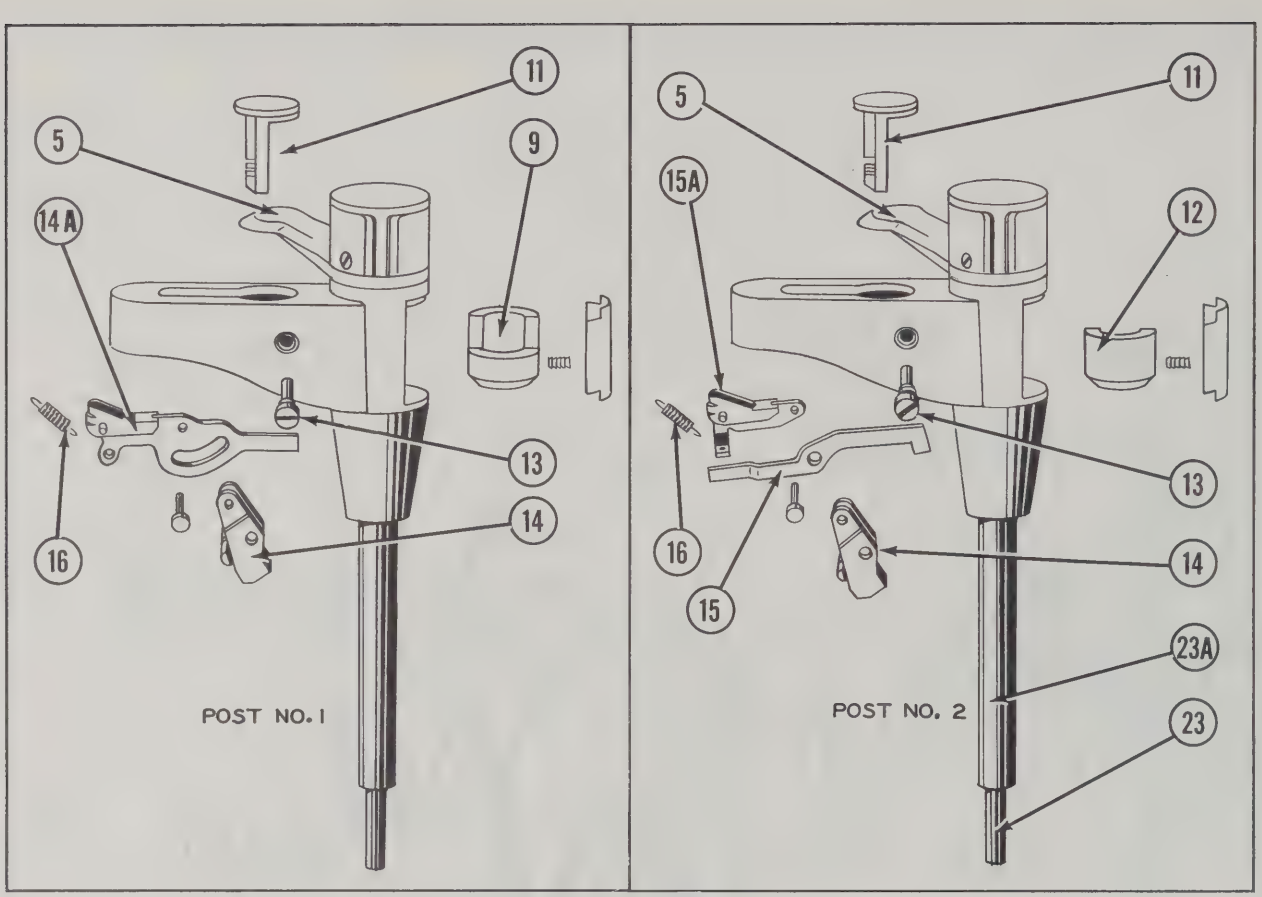


EXPLODED VIEW OF POST No. 1 AND POST No. 2

10-inch record to the turntable.

Selector arm No. 2 controls the pickup arm indexing of the 10-inch and 12-inch records through the action of the post link shoe on post No. 2. If the post link shoe is depressed by a 12-inch record the post link No. 2 lower (15) will be raised out of the slot in the coupling (12). Since there is no mechanical connection between post link (15) and the coupling (12), the 10-inch and 12-inch cam (67) will not turn with the selector arms; therefore, the cam follower (53) will be resting on the widest portion of the cam. The 10-inch and 12-inch set lever (54) is now set to engage the wide step on the pickup arm locator (52), thus setting the pickup arm locator for 12-inch position.

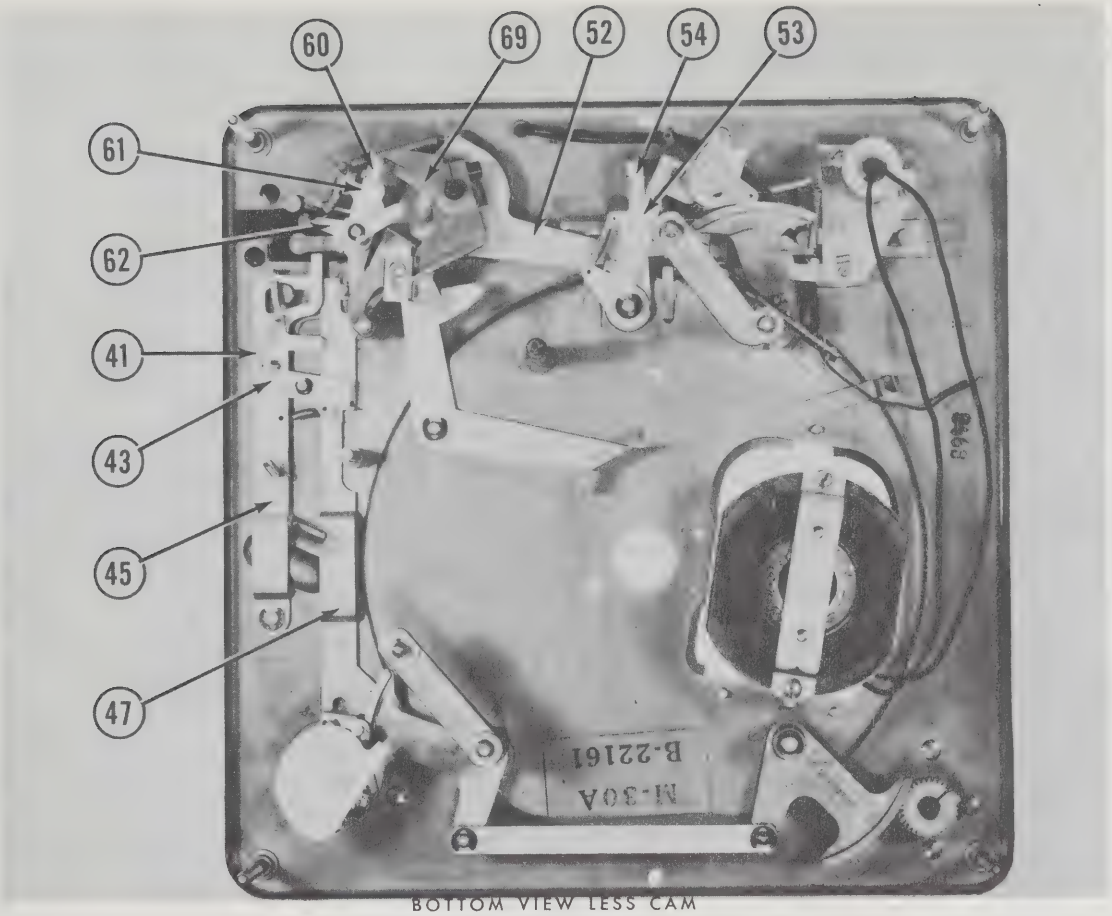
When the post link shoe is in normal position, or is pressed back by a 10-inch record, the post link No. 2 lower (15) will rest in the slot of the coupling (12). Therefore, the cam (67) turns with the selector arm. The 10- and 12-inch cam is connected to the coupling by the selector shaft pin (23). The 10- and 12-inch cam follower link (66) and spring (65) pulling against the cam follower (53) causes the follower to ride against the cam (67) as it turns, thereby setting the 10- and 12-inch set lever (54) so it will engage the narrow step of the pickup arm locator (52), thus positioning the locator for 10-inch position.

Automatic Shut-Off

The selector arm No. 1 controls the automatic shut-off through the action of the post link shoe in post No. 1. When the post link shoe of the post link (14A) is pushed back by a 10-inch record, or is depressed by a 12-inch record, the post link (14A) will clear the shut-off coupling (9); therefore, the shut-off mechanism is not actuated.

With the absence of a record on the selector arm, the post link will engage the shut-off coupling (9); therefore, the shut-off cam (57), which is connected to the shut-off coupling through the selector shaft pin (25), will be turned by the selector arm. After the last record has finished playing, the main gear is put in motion by the automatic tripping.

The stud (F) on the bottom of the gear moves away from the shut-off arm (71) allowing the arm to move in toward the gear by the tension of the spring (72). Through the action of the main cam, the pickup arm is raised from the record and is moved out to a latched position.



BOTTOM VIEW LESS CAM

As the selector arm No. 1 turns, the shut-off cam (57) is rotated against the stud of the shut-off slide bracket (50). The tension of the spring (47A) then moves the shut-off slide (47) forward and against the shut-off trip (43), thus allowing spring (42) to pull on the shut-off dog (41) and to align it with the shut-off arm. The end of the shut-off slide moves behind pickup arm center latch (61). This prevents the pickup arm lever (69) from being unlatched when the pickup arm outer latch (62) comes in contact with cam (E). After cam (E) has passed the outer latch, the shut-off cam (57) is reversed in direction, returning the shut-off slide to its normal position.

At the end of the drive gear cycle, the stud (F) on the bottom of the main gear comes in contact with the shut-off arm (71) moving it out against the shut-off dog (41). This causes the shut-off lever (45) to pivot against the end of the control slide at point (0), thus moving the control slide into the "off" position and turning off the switch (33).

As the main gear completes its cycle, stud (F) on the bottom of the main gear passes the widest portion of the shut-off arm, permitting the shut-off arm (71) and the shut-off lever (45) to return to their normal position. This allows the shut-off dog (41) to be caught by the shut-off trip (43), thus returning the shut-off dog to its rest position.

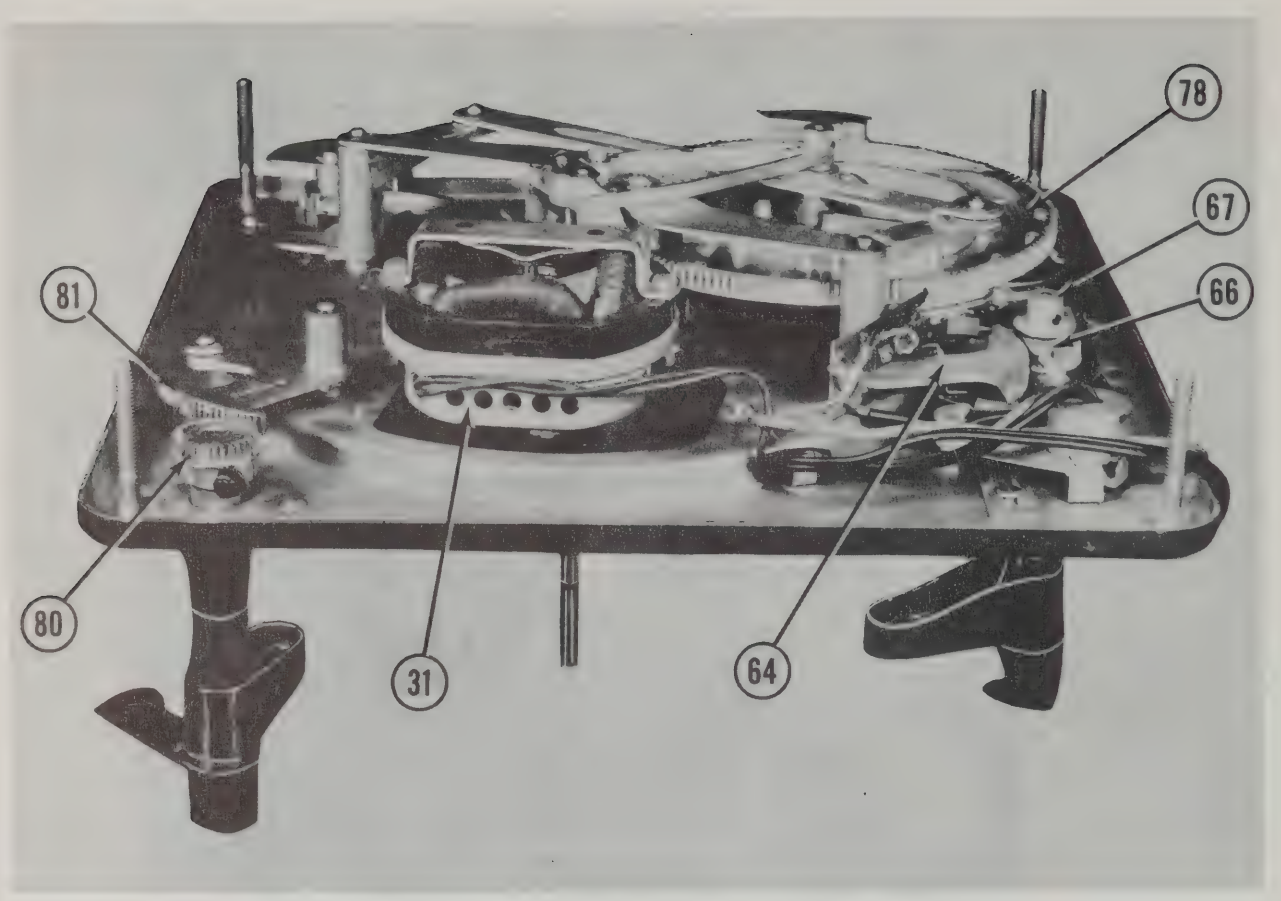
ADJUSTMENTS

Pickup Arm Height

The maximum height of the pickup arm during the change cycle should be such that there would be 3/8" clearance between the pickup arm and the bottom of a 10" record on the selector arms. The height of the pickup arm is adjusted by screw (18).

Pickup Arm Positioning

1. Set the control knob in "off" position (with the power plug out).
2. Loosen the screw of the pickup arm lever (69) just enough to allow the pickup arm lever to still hold its position.
3. Place a 10" record on the turntable and one on the selector arms.
4. Push the control knob to "reject" and release it.
5. Rotate the turntable clockwise until the needle is just about to land on the record.



BOTTOM VIEW RIGHT SIDE

6. The needle should be approximately ⅛″ in from the edge of the record. Correction may be made by slipping the pickup arm lever (69) slightly. Be sure there is sufficient vertical clearance in the pickup arm shaft to avoid binding.

7. Tighten the screw in the pickup arm lever.

Selector Arm Adjustment

With the changer out of cycle, place a 10″ record on the selector arms. There should be a distance of approximately 3/16″ from the edge of the record to ends of the post link shoes. To make adjustment, loosen the screws in the post gears No. 1 (51), No. 2 (63), and No. 3 (80), depending upon which selector arm is to be adjusted.

Selector Blades

The selector blades should be adjusted so they will just clear the edge of a 10-inch record of average thickness. The blade may be adjusted by bending, very slightly, to the correct position (use pliers with tape-lined jaws).

With a 12-inch record on the selector arms, the blade will rise after it first contacts the edge of the record. This rising cam action results whenever pressure is applied to the leading edge of the selector blade. The height of the blades must be properly set or, due to the cam action which always operates in an up direction, they will attempt to change two records at a time.

The leading edges must be smooth and well polished. They must be free in their mountings so they will return to their normal position.

TROUBLES

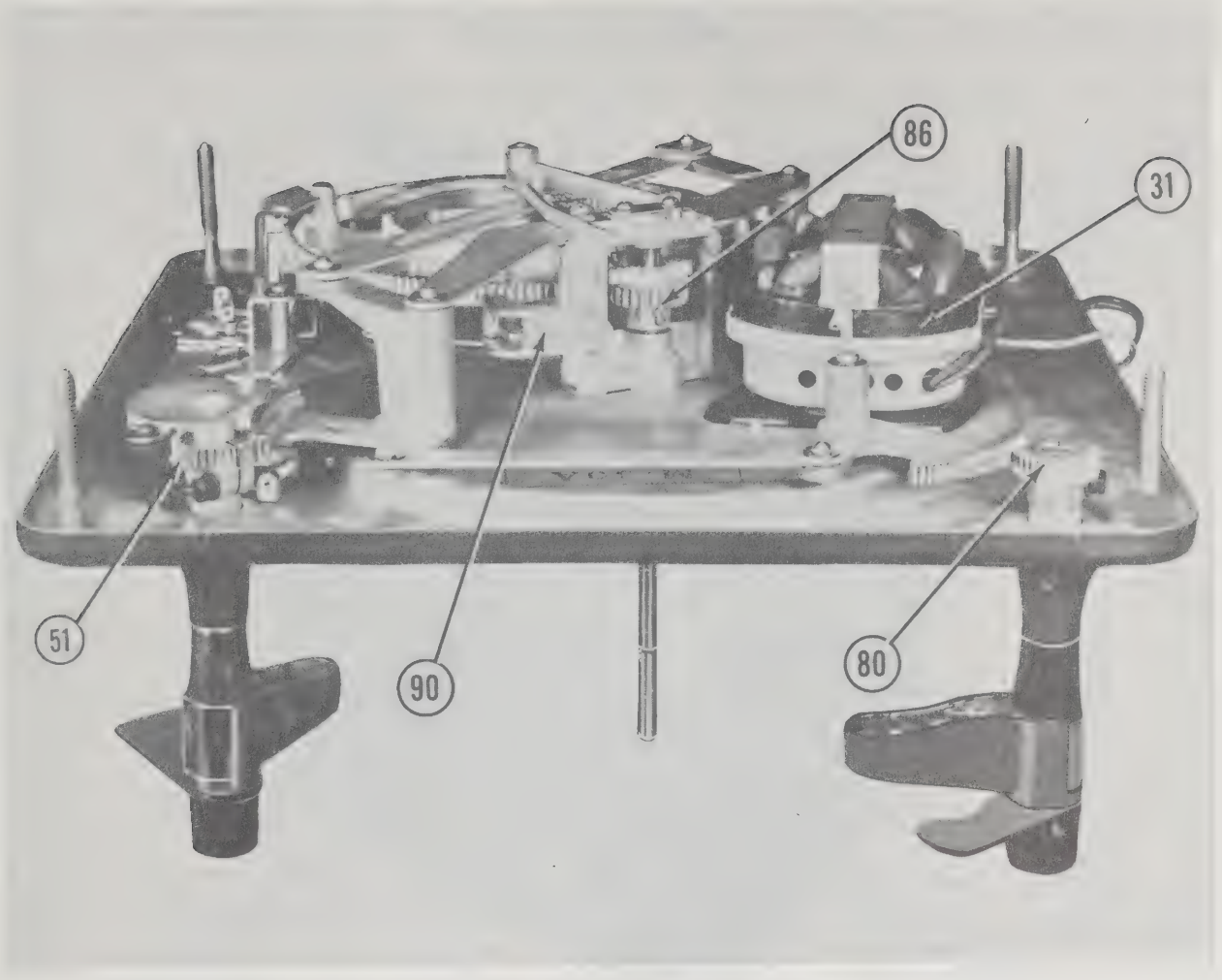
Changer Fails to Trip at the End of a Record

1. Pawl spring of the trip lever (75) loose or missing.

2. The trip shoe (70) is incorrectly set. The trip shoe should be adjusted so the changer will trip when the needle is 1⅞″ from the record center.

3. The clutch engagement lever (77) not unlatching. Check binding or foreign matter around the lever.

4. Pickup arm binds when moved toward spindle as a result of insufficient vertical clearance for the pickup arm shaft (22). This is caused by the pickup



BOTTOM FRONT VIEW

arm lever (69) being too close to the underside of the panel.

Incorrect Pickup Arm Indexing

1. Check spring (55)
2. Spring (49) loose or missing
3. Pickup arm retard lever (73) binds
4. Spring (65) loose or missing

Turntable Speed Slow

1. Lack of lubrication in spindle bearings
2. Weak idler wheel spring causing idler wheel to slip
3. Oil or grease on turntable rim

Changer Trips Continually

1. Clutch engagement lever fails to latch:
   (a) Trip lever (77) binds
   (b) Spring (76) loose or missing
   (c) Control slide binds in reject
2. Stop lever fails to engage the detent in the cam (M) of the main gear

Record Jams

1. Selector arms improperly set
2. Selector blades improperly adjusted
3. Odd-sized or damaged records

Changer Does Not Shut Off on Completion of the Last Record

1. Check to see if the coupling (9) is tight on the shaft (25).
2. Cam (57) may be loose on the shaft (25).
3. The shut-off slide (47) binds.
4. Check springs (42), (44), and (47A) to see if they are connected and that there is sufficient tension to perform their duty.

Pickup Arm Does Not Come Down in Rest Position on Completion of Last Record

1. Insufficient tension of spring (58).

PARTS LIST

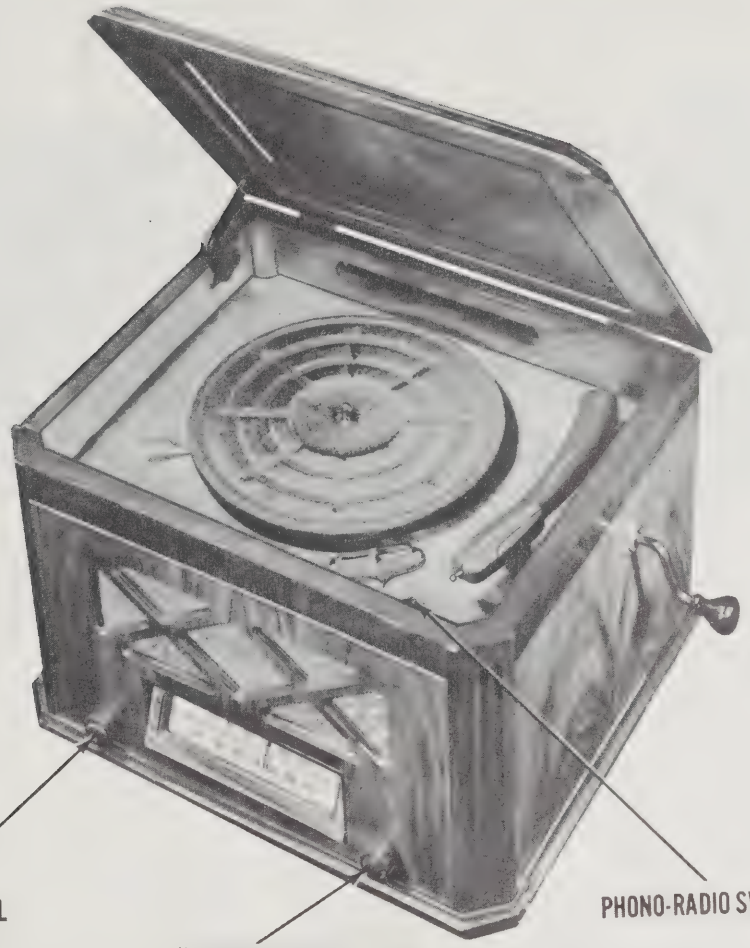
Ref. No.	Part No.	DESCRIPTION
1	M-232099	Selector arm knob
2	H-20065	"C" washer
3	M-232098	Cup washer
4	M-232097	Selector blade spring
5	M-232095	Selector blade
6	L-230211	Pickup arm—aluminum
7	M-232180	Pickup cartridge
8	M-232093	Selector arm
9	M-232110	Selector arm shut-off coupling No. 1
10	M-232116	Selector arm cover
11	M-232125	Lifter plunger
12	M-232113	Selector arm 10-12" coupling No. 2
13	M-232104	Lifter crank screw
14	M-232126	Lifter crank
15	M-232102	Post link No. 2 lower
15A	M-232136	Post link No. 2 upper assembly
16	M-232135	Post link spring
17	K-228148	Pickup arm bracket
18	K-228238	Pickup arm adjusting screw
19	K-228224	Pickup arm fulcrum
20	K-228223	Fulcrum clamp
	M-232076	Spindle
21	K-228099	Counterbalance spring
22	K-228145	Hinge bracket and shaft assembly
22A	K-228199	Pickup arm lift pin
23	M-232109	Selector shaft pin
23A	M-232088	Selector arm shaft
24	L-230146	Turntable assembly
25	M-232109	Selector shaft pin
25A	M-232088	Selector arm shaft
26		Flat washer
27	L-230028	Control knob assembly
28	M-232117	Control escutcheon
29	M-232114	Selector arm shaft
30	M-232036	Idler wheel assembly
31	M-232032	Motor assembly
32	M-232123	Control slide assembly
33	K-228213	Switch
	K-228243	Switch cover
	K-228243	Switch cover insulator
34	M-232028	Switch plate assembly
	M-232029	Switch lever assembly (part of 34)
35	L-230064	Detent arm assembly
36	L-230068	Detent arm spring
37	J-22058	Coil spring
38	M-232023	Manual lockout spring—inner
39	M-232019	Manual lockout assembly
40	M-232025	Pickup arm locator hub
41	M-232054	Shut-off dog
42		Shut-off trip spring
43	M-232055	Shut-off trip assembly
44	M-232078	Shut-off lever spring
45	M-232053	Shut-off lever
46		"C" washer
47	M-232051	Shut-off slide
47A	L-230038	Shut-off slide spring
48	M-232141	Manual reject lever
49	M-232045	Pickup arm locator spring
50	M-232058	Shut-off slide bracket assembly
51	M-232089	Post gear No. 1
52	M-232027	Pickup arm locator
53	M-232143	10-12" cam follower
54	M-232142	10-12" set lever
55	L-230038	10-12" set lever spring
56	H-20129	Booster spring
57	M-232106	Shut-off slide cam assembly
58	M-232079	Shut-off arm spring
59	L-230053	Pickup arm latch spring (outer)
60	M-232043	Pickup arm latch (inner)
61	M-232042	Pickup arm latch (center)
62	M-232044	Pickup arm latch (outer)
63	M-232089	Post gear No. 2
64	M-232064	Segment No. 2
65	M-232078	Spring
66	M-232081	10-12" cam follower link
67	M-232111	10-12" cam assembly
68	L-230102	Drive gear shaft
69	M-232047	Pickup arm lever assembly
70	K-228156	Trip shoe
71	M-232057	Shut-off arm
72	M-232079	Shut-off arm spring
73	L-230117	Pickup arm retard lever
74	B-27067	Retard lever spring
75	L-230113	Trip lever assembly
75A	L-230158	Trip roller
76	B-27092	Trip lever spring
77	L-230111	Clutch engagement lever
78	M-232084	Drive gear
79	M-232061	Segment No. 1 assembly
80	M-232089	Post gear No. 3
81	M-232066	Segment No. 3
82	M-232085	Drive link roller
83	M-232086	Drive link assembly
84	M-232067	Segment link
85	M-232082	Segment tie plate
86	L-230101	Pinion gear
87		Tapered pin
88	M-232072	Drive gear stop lever assembly
89	M-232070	Spindle bushing and housing assembly
90	B-27048	Stop lever spring
91	M-232118	Muting switch blade

PHOTOFACT* Folder

*TRADE MARK

SILVERTONE MODEL 7210 (Ch. 101.820) BATTERY OPERATED

SILVERTONE MODEL 7210 (Ch. 101.820) BATTERY OPERATED



SILVERTONE MODEL 7210 (Ch. 101.820) BATTERY OPERATED

SILVERTONE MODEL 7210

TRADE NAME	Silvertone, Model 7210 (Ch. 101.820)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	Battery Operated Combination Phono-Radio Superheterodyne Receiver
TUBES (FOUR)	Types, 1LC6 Converter, 1LC5 IF Amp., 1LD5 Det.-AVC-AF, 1LB4 Power Output
POWER SUPPLY	1.5 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	190 MA @ 1.5 Volts DC and 6MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1725KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set Pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Volume control should be at maximum position output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) of 1LC6. Low side to chassis.	455KC	Tuning slugs fully closed	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	75 MMFD	High side to ext. ant. lead. Low side to chassis.	1725KC	Tuning slugs fully out.	"	A5,A6	" " " "
3	75 MMFD	"	1500KC	1500KC	"	A7,A8	Adjust for maximum output. Repeat Steps 2 & 3 until no further improvement can be made.

HOWARD W. SAMS & CO., INC. **Indianapolis 6, Indiana**

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1948 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/48 SET #32 FOLDER #482-20

PARTS LIST AND DESCRIPTIONS

SILVERTONE MODEL 7210
(Ch. 101.820) BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1LC6	1LC6	7AK	
2	IF Amp.	1LC5	1LC5	7AO	
3	Det.-AVC-AF	1LD5	1LD5	6AX	
4	Power Output	1LB4	1LB4	5AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	10	150	R57054	M-10-150	UT-121	PRSA15C-12	BR1215	Filter
6	.005	600		S-6-005	TC-25	684-005	DT6D5	Audio Coupling
7	.001	600		S-6-001	TC-21	684-001	DT6D1	" "
8	.01	400		S-4-01	TC-11	484-01	DT4S1	AF Screen Bypass
9	.01	400		S-4-01	TC-11	484-01	DT4S1	IF Screen Bypass
10	.01	400		S-4-01	TC-11	484-01	DT4S1	Conv. Screen Bypass
11	.001	600		S-6-001	TC-21	684-001	DT6D1	Conv. Anode Decoup.
12	.05	200		S-4-05	TC-15	484-05	DT4S5	AVC Filter
13	250			MO.5-325	1FM-325	1468-00025	5W5T25	Output Plate Bypass
14	50			MO.5-45	1FM-45	1468-00005	5W5Q5	AF Plate Bypass
15	50			MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
16	250			MO5.5-325	1FM-325	1469-00025	5R5T25	Fixed Pad.
17	150			MO.5-315	1FM-315	1468-00015	5W5T25	RF Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18A	500KΩ	½	R57072	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 18A per instructions
C	Switch		" "	42 .	SW-A2	" " " " "

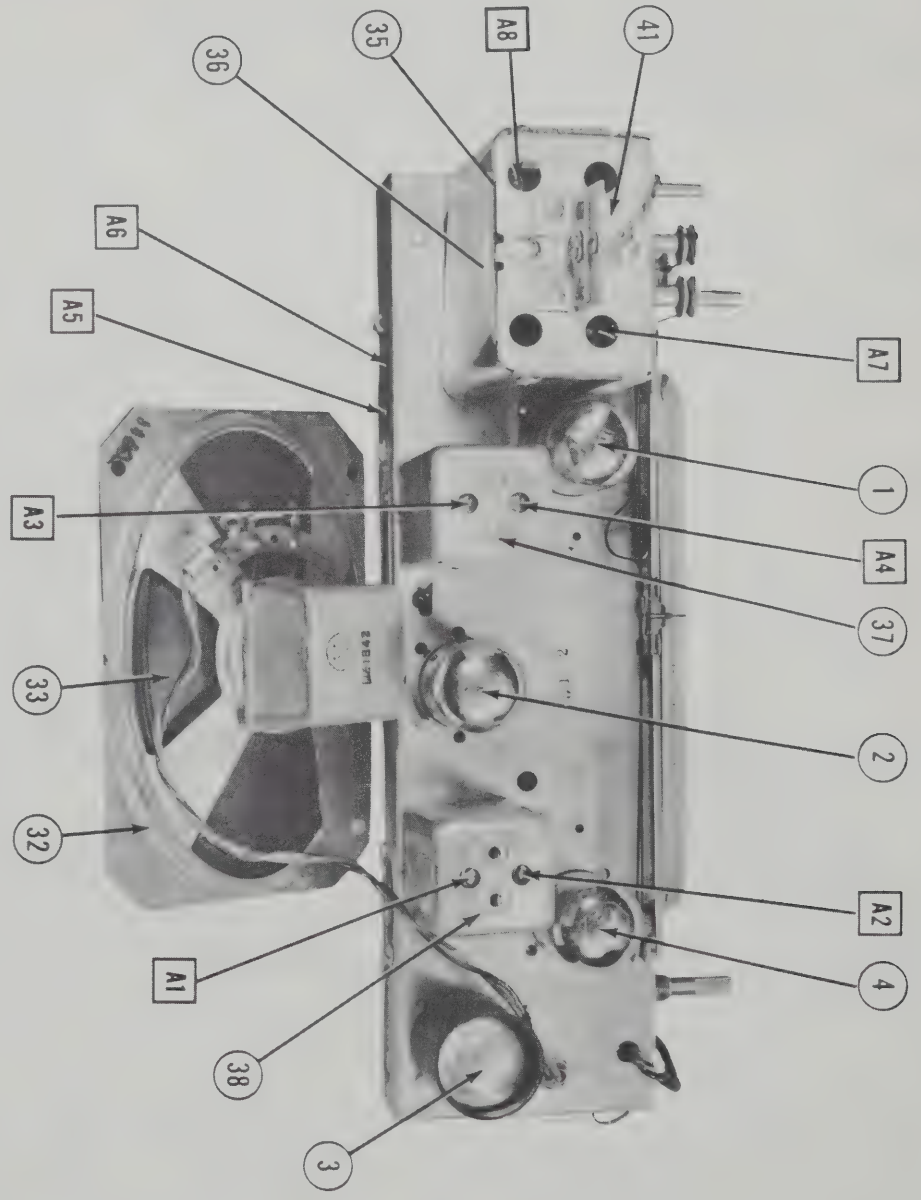
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
19	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
20	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Converter Screen Dropping
21	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
22	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Anode Dropping
23	180KΩ	½		BTS-180K	Br.-Gray-Yl. Oscillator Grid
24	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
25	6.8 Meg.	½		BTS-6.8 Meg.	Blue-Gray-Grn. AF Screen Dropping
26	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
27	220KΩ	½		BTS-220K	Red-Red-Yl. Decoupling
28	1200Ω	½		BTS-1200	Br.-Red-Red Bias
29	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Output Grid
30	4700Ω	½		BTS-4700	Yl.-Vi.-Red Decoupling

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
31	1200Ω	3.7Ω	62ΩΩ	.2Ω	R57076	A-3279*	T22547*	A-2933*	*Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA SILVERTONE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
32	PM	3.7Ω	R61842			
	CONE DIA.	VC DIA.				
33	4"x6"	1/2"	R62255			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA MEISSNER PART No.	
34	Ant. Choke Coil		102Ω	R45255		
35	Ant. Coil		10Ω			Part of permeability Tuner R57087
36	Osc. Coil	4Ω	6Ω			" " " " " "
37	Input IF	10.6Ω		R57084	16-5740†	†Add 15 Meg. res. and 250MMF cap. connected
38	Output IF	12.5Ω .3Ω		R57116		in parallel from low side of secondary to chassis.

BATTERIES

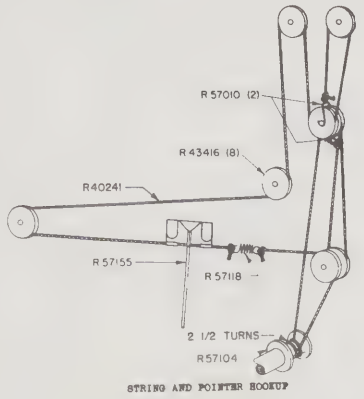
ITEM No.	VOLTAGE	SILVERTONE PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
39	1.5V "A" 90V "B"	6303			#758	

PHONO ARM AND CARTRIDGE

ITEM No.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
40A	R62260		Phono Arm
B	R62213	L-70-A	Cartridge

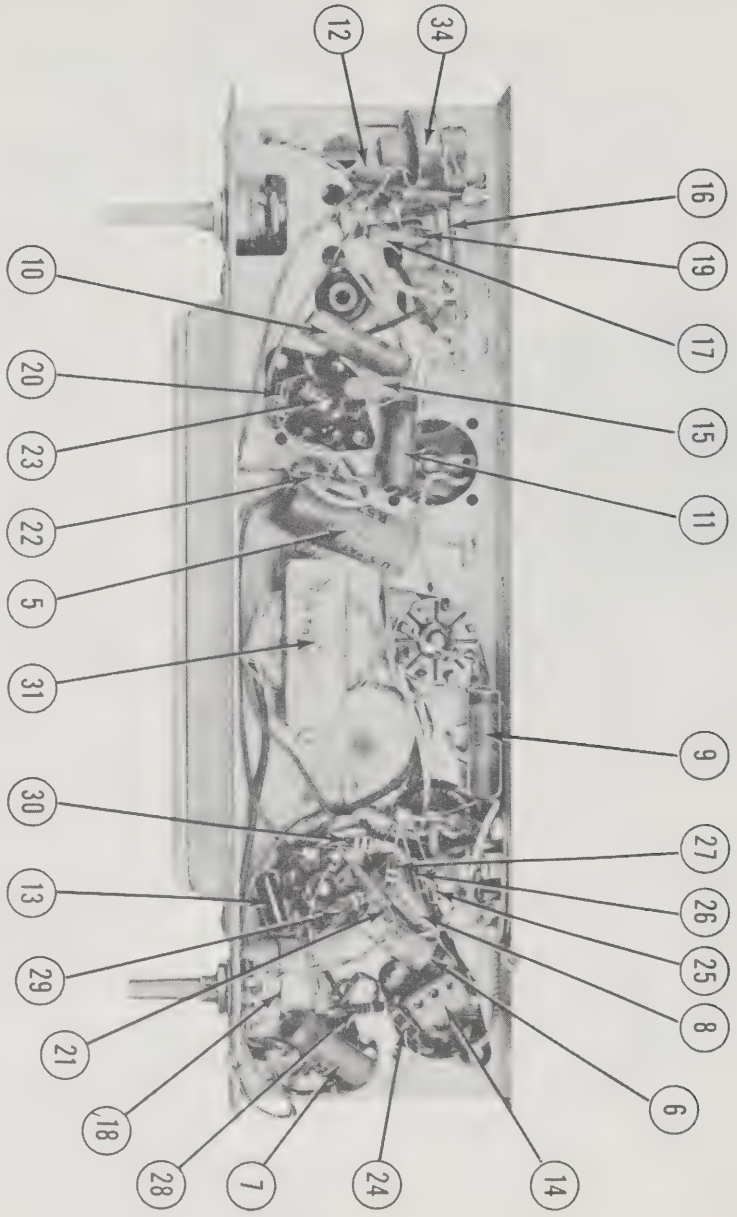
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
41	Tuning Assy.	R57087	
42	Switch & Plug	R61858	Radio-Phono
	Dial	R57084	
	Dial Pointer	R57155	



STRING AND POINTER HOOKUP

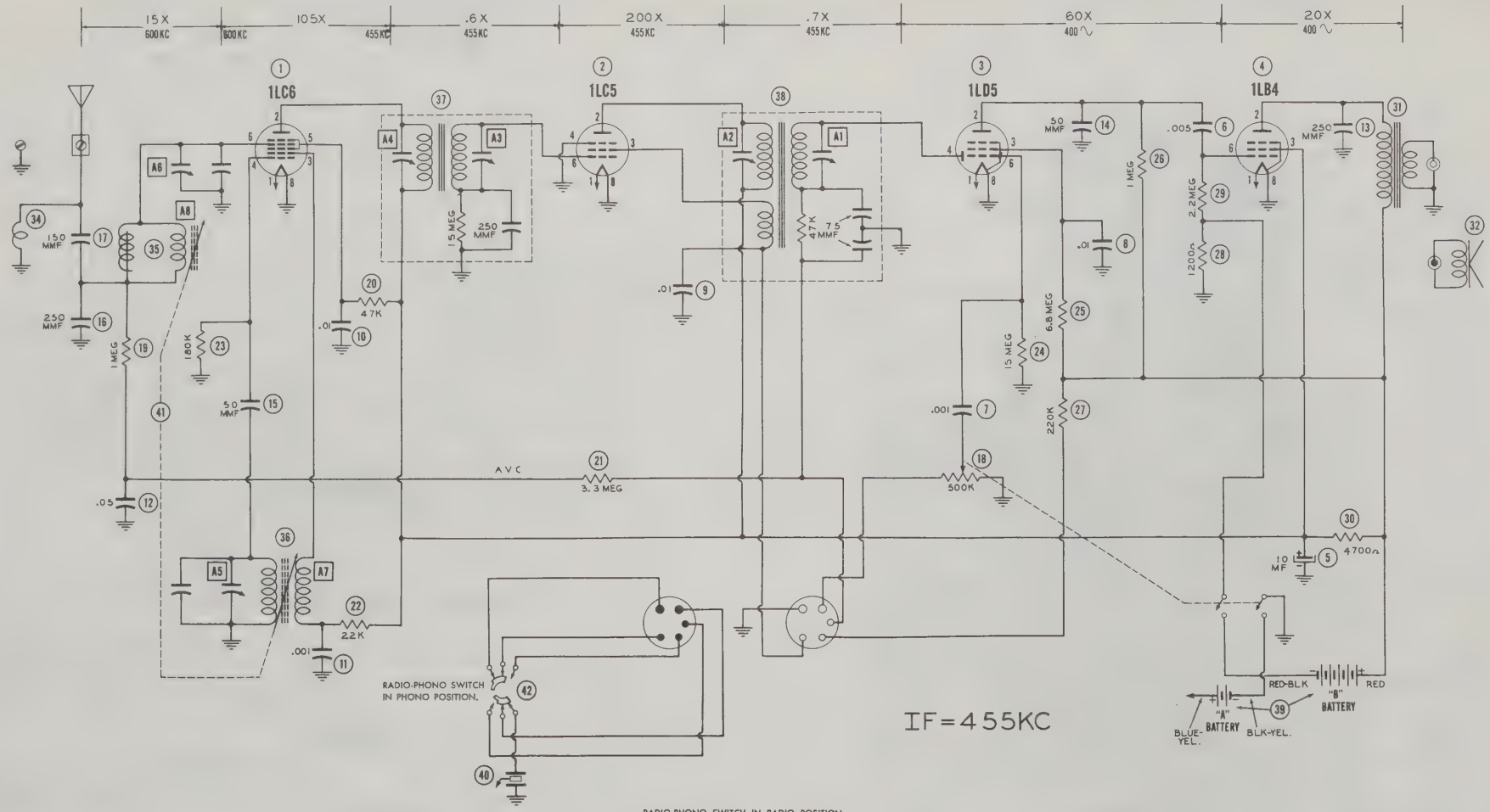
CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 7210
(Ch. 101.820) BATTERY OPERATED

DATE 1/48 SET #52 FOLDER #482-20

SILVERTONE MODEL 7210
(Ch. 101.820) BATTERY OPER.ATED



VOLTAGE READINGS

RADIO-PHONO SWITCH IN RADIO POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LC6	1.5VDC	65VDC	38VDC	-1VDC§	30VDC	0V.	0V.	0V.
2	1LC5	1.5VDC	65VDC	37VDC	0V.	0V.	0V.	0V.	0V.
3	1LD5	1.5VDC	9.5VDC	3VDC	-.2VDC	0V.	0V.	0V.	0V.
4	1LB4	1.5VDC	82VDC	65VDC	0V.	0V.	-1VDC	-8VDC	0V.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LC6	*	125KΩ	145KΩ	200KΩ	170KΩ	4 Meg.	INF.	0Ω
2	1LC5	*	125KΩ	340KΩ	0Ω	INF.	15 Meg.	INF.	0Ω
3	1LD5	*	1 Meg.	7 Meg.	600KΩ	INF.	15 Meg.	INF.	0Ω
4	1LB4	*	120KΩ	125KΩ	0Ω	INF.	2 Meg.	1200Ω	0Ω

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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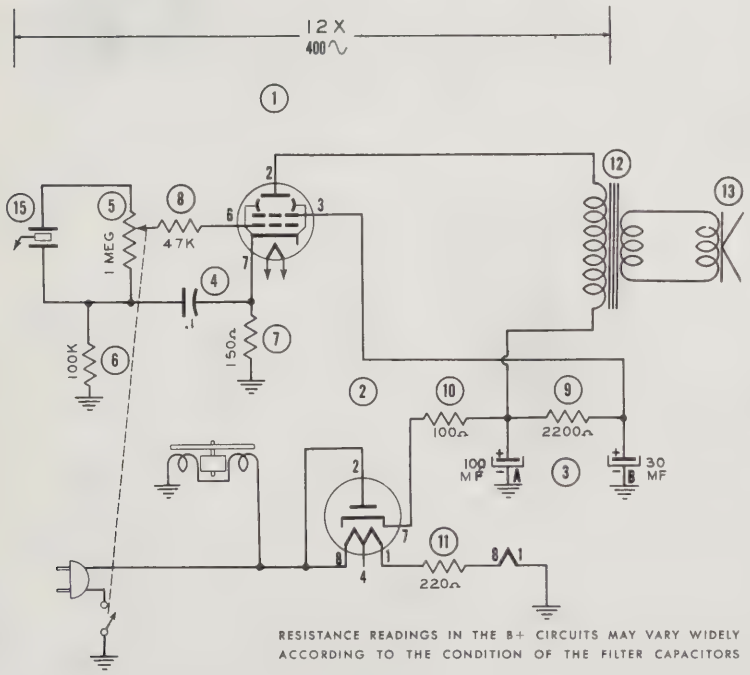
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE MODEL 8144 (Ch. 431.199)

SILVERTONE MODEL 8144

TRADE NAME	Silvertone, Model 8144 (Ch. 431.199)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC Operated Phono Player with Two Tube Amplifier
TUBES (TWO)	Types, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .21 Amp. @ 117 Volts AC



Pin No.	50A5 Volt.	Res.
1	0V.	0Ω
2	116VDC	110KΩ
3	115VDC	110KΩ
4	0V.	INF.
5	0V.	INF.
6	0V.	1.1 Meg
7	7VDC	150Ω
8	50VAC	50Ω

Pin No.	35Y4 Volt.	Res.
1	87VAC	250Ω
2	117VAC	285Ω
3	7VDC	150Ω
4	90VAC	260Ω
5	123VDC	110KΩ
6	123VDC	110KΩ
7	127VDC	110KΩ
8	117VAC	285Ω

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 1/48 SET #32 FOLDER #482-21

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Power Output	50A5	50A5	6AA	
2	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
3A	100	150	YA-8C-880	DSB-804020-150*	TA-505*	PRSA150-50-50*	EZ5515*		Filter - Red
B	30	150			UT-301	PRS150-30	BR3015		" - Green
4	.1	400		S-4-1	TC-1	424-.1	ET4P1		Audio Coupling

* Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
5A	1 Meg.	½	YA-16A-821	D1?-137	M-63-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 5A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
6	100KΩ	¼		BTS-100K	Br.-Blk.-Yl. Phono Isolation
7	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
8	47KΩ	¼		BTS-47K	Yl.-Vi.-Or. Tone Compensation
9	2200Ω	½		BTS-2200	Red-Red-Red Filter
10	100Ω	¼		BW-½-100	Br.-Blk.-Br. Surge Limiter
11	220Ω	8	YA-9C-965	AB-250	Line Dropping - See Note

Note - On IRC replacement set slider at 220Ω from one end.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
12	19000Ω	7.6Ω	170Ω	.7Ω	YB-12C-?1	A-?476	T?3S4F	A-?428	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SILVERTONE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-107		
13	PM	7.6Ω	YB-18A-949	Mod. P8-V		
	CONE DIA.	VC DIA.				
14	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

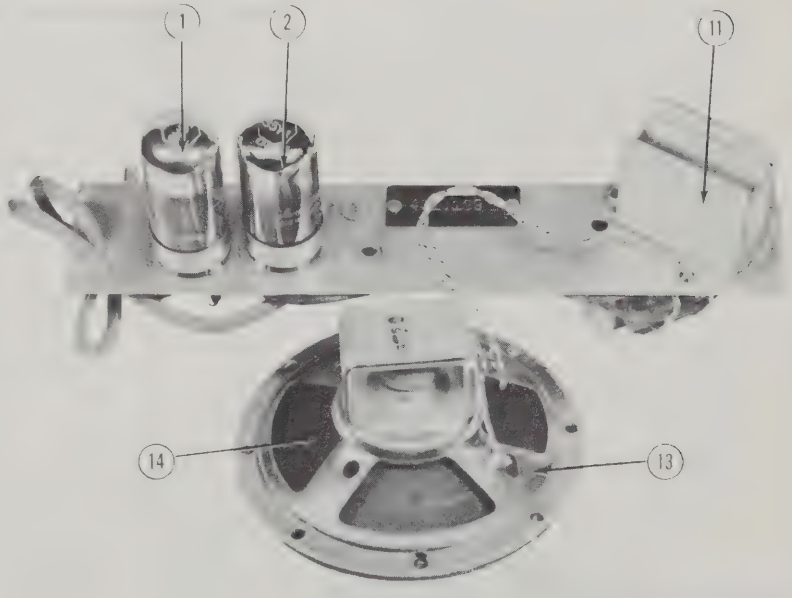
PHONO ARM AND CARTRIDGE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
15A	YA-17A-??		Pickup Arm. Includes cartridge.
B	YA-68A-?74	L-7LA	Cartridge

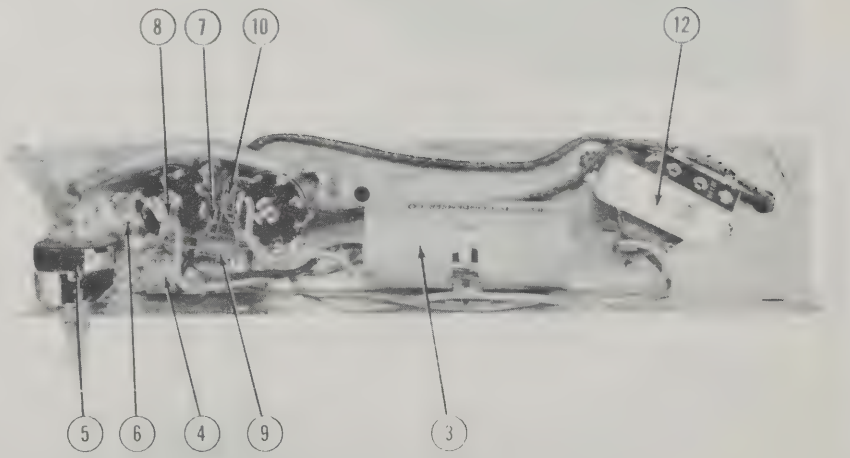
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
	Knob	YA-5B-?73	On-Off Volume

CHASSIS—TOP VIEW



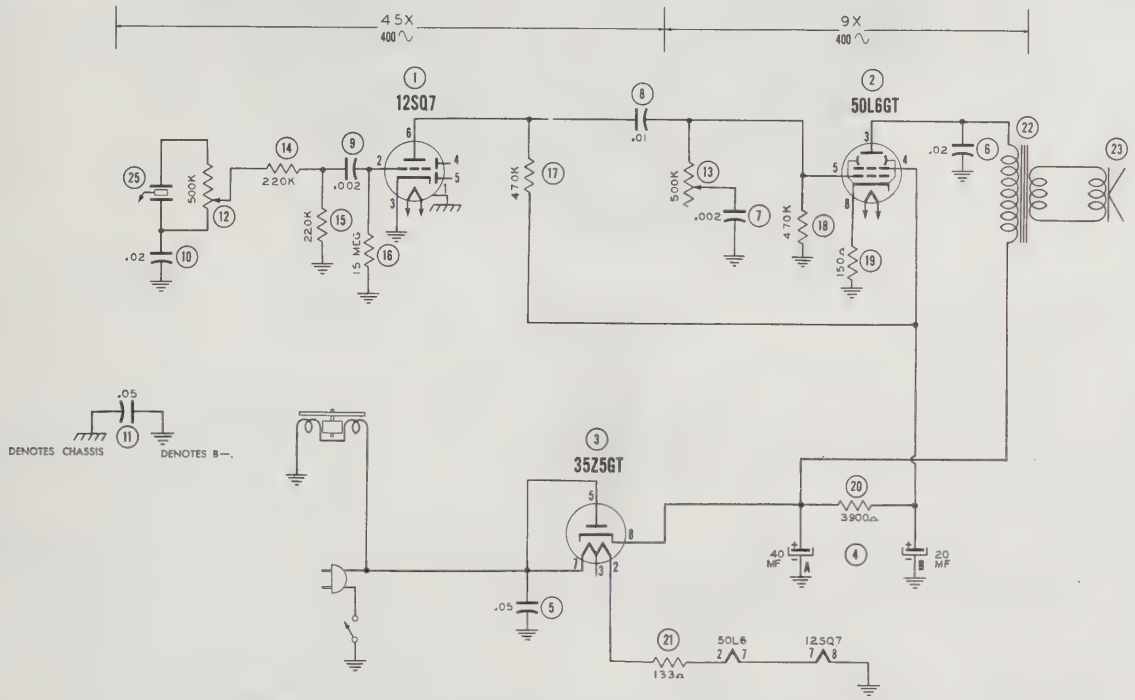
CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 8150 (Ch. 109.634)

SILVERTONE MODEL 8150

TRADE NAME	Silvertone, Model 8150 (Ch. 109.634)
MANUFACTURER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC Operated Phono Player with Three Tube Amplifier
TUBES (THREE)	Types, 12SQ7GT AF Amp., 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC RATING .24 Amp. @ 117 Volts AC



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SQ7	0V.	-2.5VDC	0V.	0V.	0V.	80VDC	11VAC	0V.
2	50L6	0V.	60VAC	134VDC	130VDC	0V.	0V.	11VAC	9VDC
3	35Z5	0V.	82VAC	90VAC	60VAC	117VAC	130VDC	117VAC	145VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SQ7	0Ω	15 Meg.	0Ω	0Ω	0Ω	535KΩ	14Ω	0Ω
2	50L6	0Ω	65Ω	65KΩ	65KΩ	500KΩ	220KΩ	14Ω	150Ω
3	35Z5	0Ω	190Ω	200Ω	65Ω	225Ω	65KΩ	225Ω	65KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	12SQ7GT	12SQ7GT	5Q	
2	Power Output	50L6GT	50L6GT	7AC	
3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	40	150	DA8948	DY-4020-150	EL-24	AF58D	UP4215	■ Filter
B	20	150						▲ Filter
5	.05	400		S-4-05	TC-15	484-05	DT4S5	Line Filter
6	.02	400		S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
7	.002	600		S-6-002	TC-22	684-002	DT6D2	Tone Comp.
8	.01	400		S-4-01	TC-11	484-01	DT4S1	Audio Coupling
9	.002	600		S-6-002	TC-22	684-002	DT6D2	" "
10	.02	400		S-4-02	TC-12	484-02	DT4S2	Phono Isolation
11	.05	400		S-4-05	TC-15	484-05	DT4S5	Line Isolation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
12A	500KΩ	½	DB54466-1	D13-133	AM-60-Z	Volume Control
B	Shaft			E	KSS-3	Attach to 12A per instructions
13A	500KΩ	½	DB54466-1	D13-133	AM-60-Z	Tone Control
B	Shaft			E	KSS-3	Attach to 13A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
14	220KΩ	½		BTS-220K	Red-Red-Yl. Tone Compensation
15	220KΩ	½		BTS-220K	Red-Red-Yl. Tone Compensation
16	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
17	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
18	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
19	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
20	3900Ω	½		BTS-3900	Or.-White-Red Filter
21	133Ω	5	DA9528	AB-150	Line Dropping - See Note

Note - On IRC replacement set slider at 133Ω from one end.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
22	2250Ω	3.5Ω	255Ω	.7Ω	DB51578-2	A-3876	T22S45	A-2928	

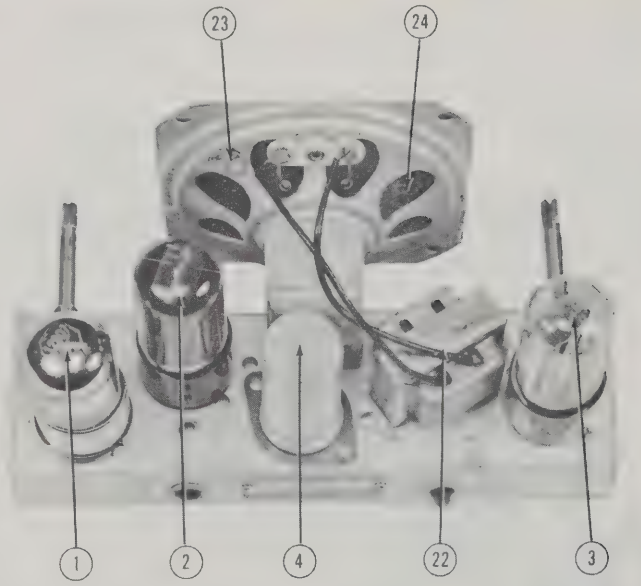
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SILVERTONE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-113†		†Drill and tap magnet frame.
23	PM	3.5Ω	DC-56029	Mod. P4-X		
	CONE DIA.	VC DIA.				
24	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

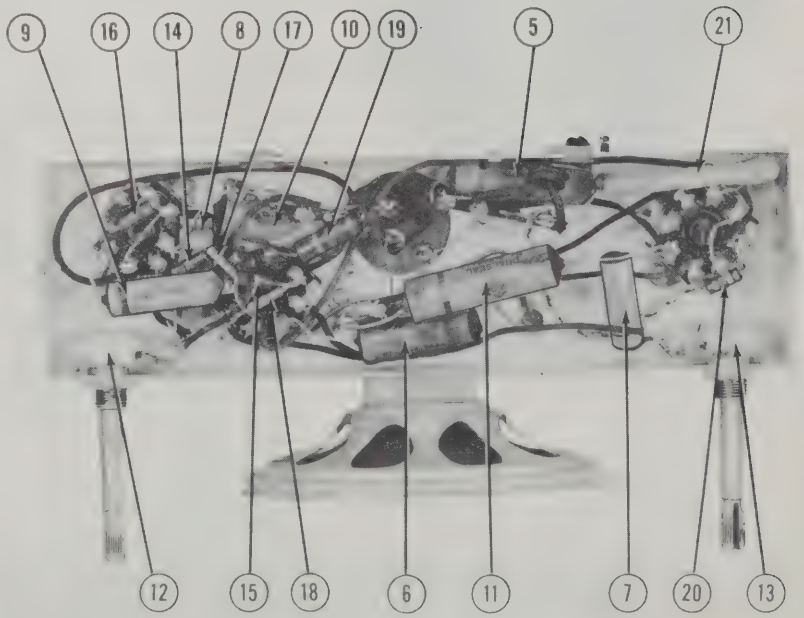
PHONO ARM AND CARTRIDGE

ITEM No.	REPLACEMENT DATA: SILVER. PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
25A	DB50385		Pickup Arm
B	DA50302-1	L-70-A*	Cartridge *Remove ground lug.

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



SONORA MODEL
WBRU-239

SONORA MODEL
WBRU-239

SONORA MODEL WBRU-239

TRADE NAME	Sonora, Model WBRU-239
MANUFACTURER	Sonora Radio & Tel. Corp., 325 N. Hoyne Ave., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1620KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	100MMFD	High side to ext. ant. terminal. Low side to B-.	1620KC	"	"	A4	Adjust for maximum output.
3	100MMFD	"	1400KC	Tune for maximum output.	"	A5	Adjust for maximum output. Check calibration & tracking at 600KC.

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DATE 1/48 SET #32 FOLDER #482-23

PARTS LIST AND DESCRIPTIONS

SONORA MODEL WBRU-239

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SONORA PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	35L6GT	35L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SONORA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	40	150	N-5051	DSB-2x40-150	TA-440	PRSA150-40-40	BRD4415	▲ Filter
B	40	150						■ "
7	.02	400	N-1376	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
8	.1	400	N-1623	S-4-1	TC-1	484-.1	DT4P1	Tone Control
9	.01	400	N-1344	S-4-01	TC-11	484-01	DT4S1	Audio Coupling*
10	.05	200	N-1345	S-4-05	TC-15	484-05	DT4S5	AF Plate Decoupling
11	.005	600	N-4894	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
12	.05	200	N-1345	S-4-05	TC-15	484-05	DT4S5	Line Isolation
13	.05	200	N-1345	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	.09	200	N-4957	S-2-1	TC-1	484-.1	DT4P1	Phono Isolation
15	.05	400	N-1346	MPH-4-05	TC-15	484-05	DT4S5	Rectifier Bypass
16	250	500	N-6135	MO.5-325	1FM-325	1468-00025	5W5T25	AF Plate Bypass*
17	100	500	N-6015	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
18	100	500	N-6015	MO.5-31	1FM-31	1468-0001	5W5T1	Ext. Ant. Isolation

*Some sets use audio coupling plate #N-6471 which contains Items 9, 16, 27 & 29 as a single unit.

CONTROLS

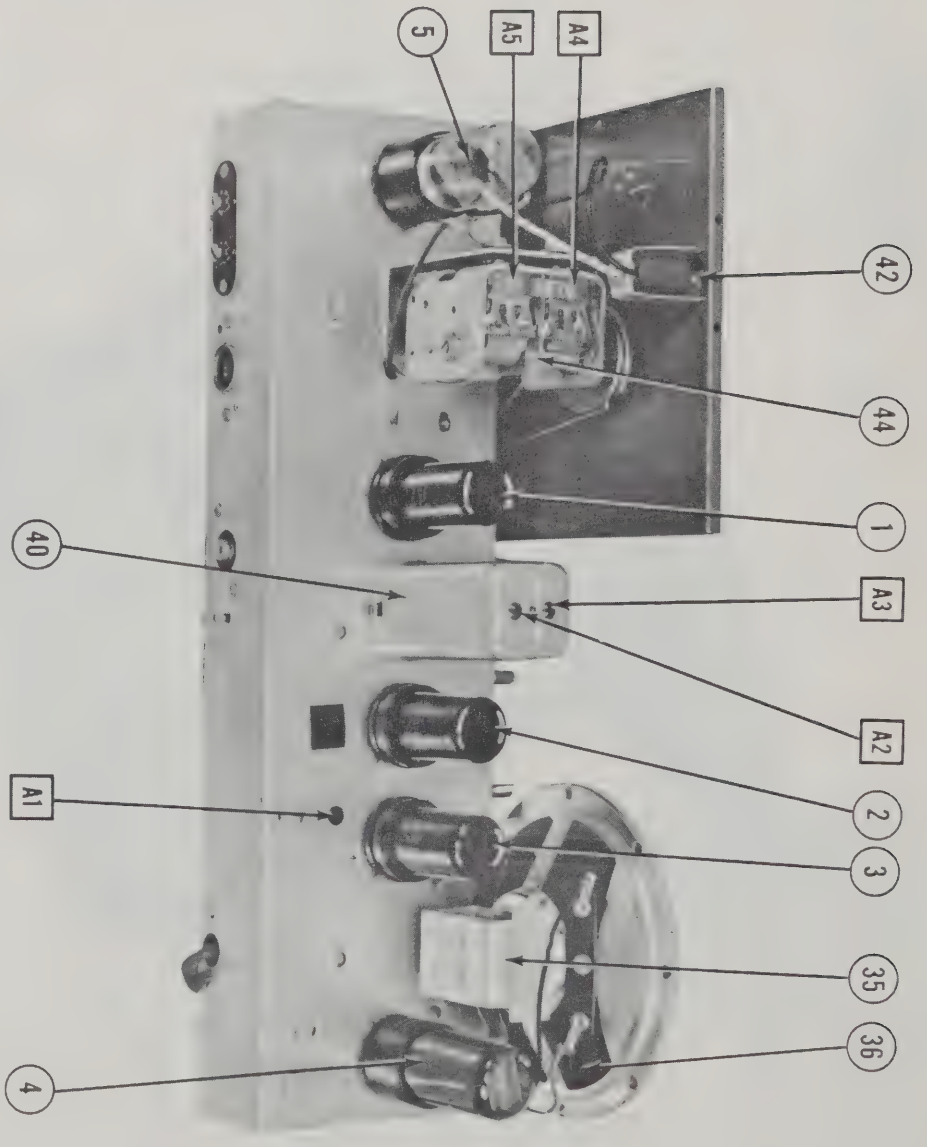
ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	SONORA PART No.	IRC PART No.	CLAROSTAT PART No.	
19A	500KΩ	½	N-4843 or	D13-133	AM-60-Z	Volume Control
B	Shaft		N-5757	E	KSS-3	Attach to 19A per instructions
C	Switch		Not Req.	41	SW-A	" " " " "
20A	25KΩ	½	N-6157	D16-120		Tone Control
B	Shaft		Not Req.	E		Attach to 20A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SONORA PART No.	IRC PART No.	
21	22KΩ	½	N-4025	BTS-22K	Red-Red-Or. Oscillator Grid
22	220KΩ	½	N-4026	BTS-220K	Red-Red-Yl. Line Isolation
23	1 Meg.	½	N-1262	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
24	47KΩ	½	N-4063	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
25	1 Meg.	½	N-1262	BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
26	6.8 Meg.	½	N-4028	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid
27	220KΩ	½	N-4026	BTS-220K	Red-Red-Yl. AF Plate Load*
28	33KΩ	½	N-4064	BTS-33K	Or.-Or.-Or. AF Plate Decoupling
29	470KΩ	½	N-4027	BTS-470K	Yl.-Vi.-Yl. Output Grid*
30	180Ω	½	N-4067	BW-½-180	Br.-Gray-Br. Output Cathode
31	1000Ω	1	N-5358	BTA-1000	Br.-Blk.-Red Filter
32	33Ω	½	N-4022	BW-½-33	Or.-Or.-Blk. Surge Limiter
33	82Ω	2	N-4023	BW-2-82	Gray-Red-Blk. Line Dropping

*Some sets use audio coupling plate #N-6471 which contains Items 9, 16, 27 & 29 as a single unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SONORA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
34	2650Ω	3.4Ω	300Ω tapped @ 13Ω	.5Ω	N-4875	A-3876†		A-2823†	†Add extra filter to reduce to hum level.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SONORA PART No.	JENSEN PART No.		
35	FIELD PM	VC IMP. 3.4Ω	N-6148	ST-105 Mod. P5-X		
36	CONE DIA. 4½"	VC DIA. ½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

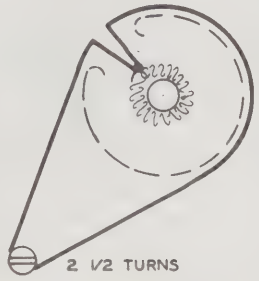
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SONORA PART No.	MEISSNER PART No.	
37	Loop Ant.		.5Ω			
38	Ant. Coil	.8Ω	2.5Ω	N-6149		
39	Osc. Coil	.8Ω	6.1Ω	N-4810	14-1040	Add 50MMF from osc. grid to high side tuning cap.
40	Input IF	21Ω	20Ω	N-4813	16-6658	
41	Output IF	29Ω	29Ω	N-4846		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SONORA PART No.		
42	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

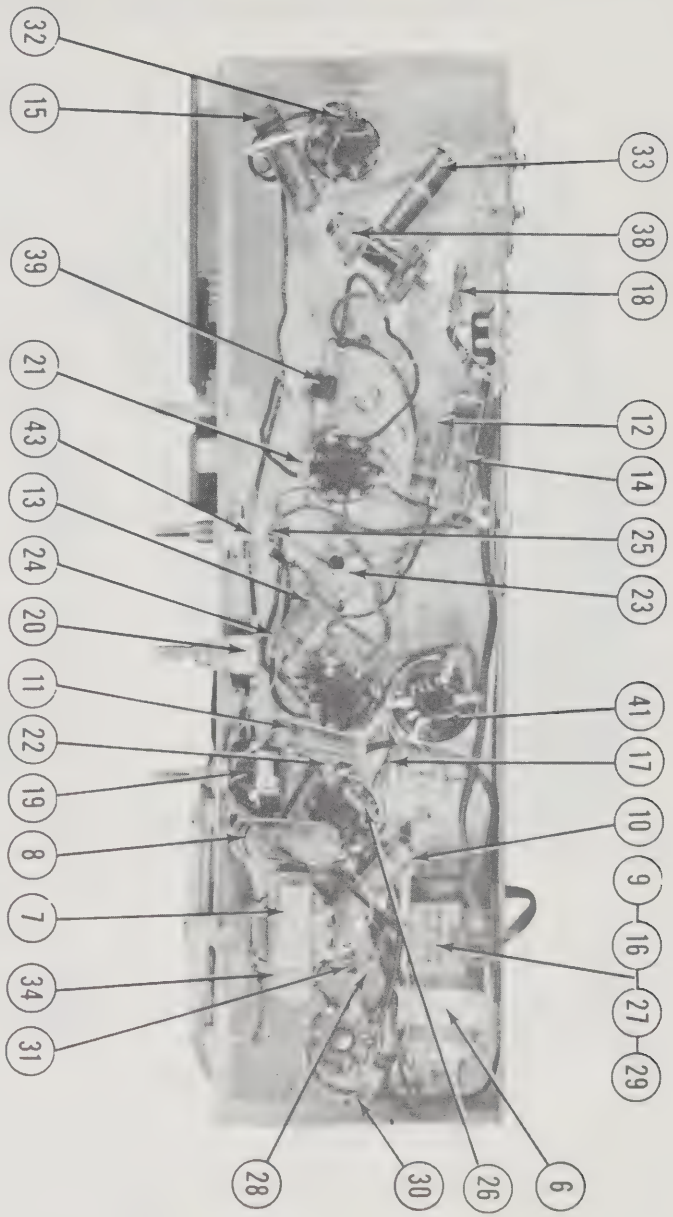
ITEM No.	PART NAME	SONORA PART No.	NOTES
43	Switch	N-6145	Radio-Phono (N-6156 Alternate)
44	2 Gang Var. Cap.	N-6154	(26-386 MMF, 35-202 MMF)
A1	Trimmer	N-4985	Output IF Adj.



TUNING GANG FULLY CLOSED

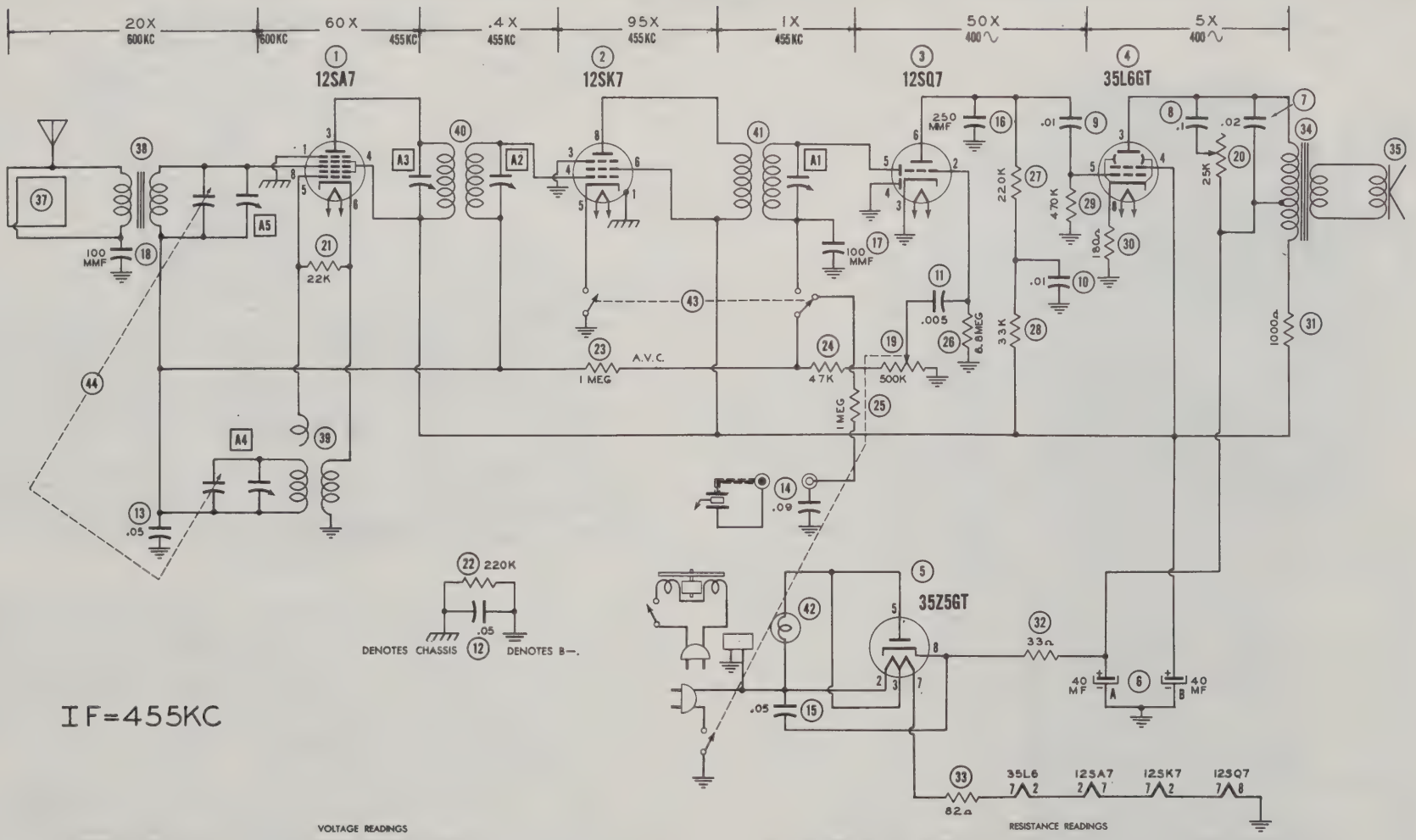
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



SONORA MODEL WBRU-239

SONORA MODEL WBRU-239



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	38VAC	85VDC	85VDC	-14VDC§	0V.	25VAC	-.2VDC
2	12SK7	0V.	12VAC	0V.	0V.	0V.	85VDC	25VAC	85VDC
3	12SQ7	0V.	-.7VDC	0V.	0V.	-.4VDC	70VDC	12VAC	0V.
4	35L6	0V.	38VAC	110VDC	85VDC	0V.	0V.	75VAC	6VDC
5	35Z5	0V.	117VAC	111VAC	113VDC	111VAC	75VAC	85VAC	115VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.
RADIO-PHONO SWITCH IN RADIO POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	200KΩ	43Ω	300KΩ	300KΩ	21KΩ	.8Ω	28Ω	1.5 Meg
2	12SK7	200KΩ	13.5Ω	0Ω	1.5 Meg.	0Ω	300KΩ	28Ω	300KΩ
3	12SQ7	200KΩ	7 Meg.	0Ω	0Ω	550KΩ	550KΩ	13.5Ω	0Ω
4	35L6	INF.	43Ω	300KΩ	300KΩ	470KΩ	0Ω	85Ω	170Ω
5	35L5	INF.	200Ω	198Ω	300KΩ	198Ω	85Ω	155Ω	300KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS 482-23

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

STEWART-WARNER MODELS A72T1, A72T2, A72T3, A72T4

STEWART-WARNER MODEL A72T3

TRADE NAME	Stewart-Warner, Models A72T1 (Ch. 9026-A), A72T2 (Ch. 9026-B), A72T3 (9026-C) A72T4 (Ch. 9026-D)
MANUFACTURER	Stewart-Warner Corp., 1826 Diversey Pkwy., Chicago, Ill.
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Ant.
TUBES (SEVEN)	Types, 12BA6 FM RF Amp., 12BE6 Converter, 12BA6 1st IF Amp., 12BA6 2nd IF Amp., 12H6 Discriminator, 6AQ6 Det.-AVC-AF, 50B5 Power Output.
POWER SUPPLY	105-125 Volts AC-DC RATING .29 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC FREQ. MOD. 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If alignment of both AM & FM channels is required it is necessary to align the AM channel first then the FM channel.

With the tuning cap. fully closed pointer should coincide with last mark below 55 on dial. If it is set incorrectly release pointer clip and reposition pointer.

Remove chassis and loop from cabinet. With tuning cap. still fully closed make a light pencil mark on dial backplate under pointer. Use this reference mark for calibration purposes in following procedure.

Connect ground lead of signal generator to B- lug. CAUTION-If your signal generator is designed with an AC-DC type power supply, connect ground lead of signal generator to B- lug through a .25 MFD. capacitor.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 7 (grid) 12BE6. Low side to B-.	455KC	BC (counter-clockwise)	Any point of non interference.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output in order given and then repeat.
2	200MMFD	High side to ext. "AM" ant. terminal. Low side to B-.	1500KC	"	4-3/4" from reference mark.	"	A5	Adjust for maximum output
3	200MMFD	"	"	"	Tune for maximum output.	"	A6	" " " "
4	200MMFD	"	600KC	"	"	"	A7	Adjust for maximum output. Try to increase output by detuning A7 and retuning receiver dial until maximum output is obtained. Repeat Steps 2, 3 & 4 until no further improvement can be made.

FOR FM ALIGNMENT SEE NEXT PAGE OF THIS FOLDER.

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FM ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

It is preferable to use an FM signal generator and oscilloscope for FM alignment; however, if this equipment is not available a reasonably accurate alignment may be obtained using a conventional AM signal generator and VTVM providing proper care is exercised in adjusting the discriminator circuit trimmer.

If an AM signal generator is used it should be capable of producing fundamental frequencies of 10.7 and 88-108MC. Generators which are dependent upon third, fourth or fifth harmonics for frequencies of 88-108MC produce beat signals with local oscillator making alignment difficult.

If alignment of both AM & FM channels is required it is necessary to align the AM channel first then the FM channel.

With chassis in cabinet turn tuning control until dial pointer is at 98MC. Remove chassis and make a light pencil mark under pointer to indicate 98MC calibration point.

Do not attempt to reposition pointer by releasing it from clip as this is done only during AM alignment.

Set the receiver volume control to the maximum volume position.

Dress FM circuit leads as short and straight as possible, particularly those in the oscillator circuit. IF plate and grid leads should also be kept short and straight.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

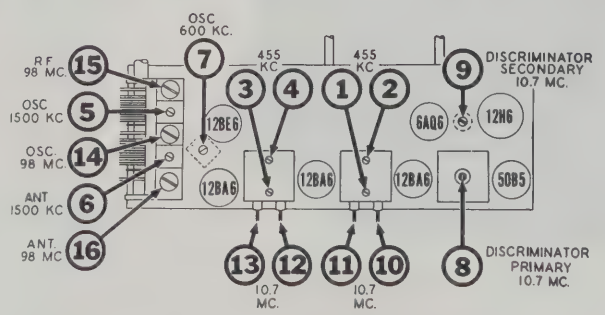
If the internal sawtooth generator (120 CPS) of the scope is used for horizontal deflection a pattern similar to that of Fig. 1 should be obtained. If the properly phase 60∿ sine wave sync. voltage from the FM signal generator is used for horizontal deflection a pattern similar to that in Fig. 2 should be obtained. Frequency modulate signal with 60∿, 300KC deviation.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	.01 MFD.	High side to Pin 1 (grid) 12BA6 2nd IF Tube (4). Low side to B- near same tube.	10.7MC (modulated ± 300KC)	FM (clock-wise)	Any point of non-interference.	Vertical input in series with .1 MFD. cap. to Point A. Ground to B-.	A8	Adjust A8 for pattern similar to Fig. 1 or Fig. 2 depending upon type of sweep used. (see prealignment instructions) Then adjust A8 for maximum amplitude and steepness of that portion of the curve between A & C.
6	.01 MFD	"	"	"	"	"	A9	Adjust until the crossover Point "B" is centrally located in both the horizontal and vertical directions; in addition the portion of the curve between "A" & "C" should be as linear (straight) as possible. Recheck settings of A8 & A9 for greater accuracy.
7	.01 MFD.	High side to Pin 1 (grid) 12BA6 1st IF Tube (3). Low side to B- near same tube.	"	"	"	"	A10, A11	Adjust A10 & A11 for maximum amplitude and steepness of that portion of the pattern between "A" and "C".
8	.01 MFD	High side to Pin 7 (grid) 12BE6. Low side to B- near same tube.	"	"	"	"	A12, A13	Adjust for maximum amplitude and steepness of pattern. If the enlarged pattern now indicates a lack of symmetry readjust A9 for correct crossover pattern.
9	120Ω & 150Ω carbon res.	High side in series with 120Ω carbon resistor to one ext. FM ant. terminal. Low side in series with 150Ω carbon resistor to other FM ext. ant. terminal.	98MC (modulated ± 300 KC)	"	98MC calibration mark. (See FM alignment instructions).	"	A14	Adjust for symmetrical pattern. Correct setting of A14 gives centrally located crossover point.
10	"	"	"	"	"	"	A15	Adjust for maximum amplitude of pattern. Recheck A12 & A13 for max. amplitude and symmetry.
11	"	"	"	"	"	"	A16	Adjust for maximum amplitude of pattern.
12	Check calibration and tracking of receiver with input signals of 88 and 108MC.							

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

In Step 6 connect two 68KΩ resistors (within 1% of each other) from Pin 3 of 12H6 to B-. Common lead of VTVM connects to junction of these two resistors.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	.01 MFD	High side to Pin 1 (grid) 12BA6 2nd IF Tube (4). Low side to B- near same tube.	10.7MC (400∿ modulation)	FM (clock-wise)	Any point of non-interference.	DC probe to Point B. Common lead to B-.	A8	Set VTVM to low DC range. Adjust A8 for maximum meter reading. (negative)
6	.01 MFD	"	"	"	"	DC probe to Point C. Common lead to Point D. (Junction of two 68KΩ resistors. See above pre-alignment instructions)	A9	Set meter for operation on lowest DC scale as A9 is rotated a point will be found where VTVM will swing sharply from a positive to a negative reading or vice versa. Adjust A9 for zero voltage as A9 is moved through this point. Exercise extreme care in this adjustment. Repeat Steps 5 & 6 for greatest accuracy. Remove two 68KΩ. resistors.
7	.01 MFD	High side to Pin 1 (grid) 12BA6 1st IF Tube (3). Low side to B- near same tube.	"	"	"	DC probe to Point B. Common lead to B-.	A10, A11	Adjust for maximum meter reading.
8	.01 MFD	High side to Pin 7 (grid) 12BE6. Low side to B- near same tube.	"	"	"	"	A12, A13.	"
9	120Ω & 150Ω carbon res.	High side in series with 120Ω to one FM ant. terminal. Low side in series with 150Ω to other FM ant. terminal.	98MC (400∿ modulation)	"	98MC calibration mark (See FM alignment instructions)	"	A14	Adjust A14 to receive 98MC signal and adjust for maximum meter reading.
10	"	"	"	"	"	"	A15	Adjust for maximum meter reading. Recheck A12 & A13 for maximum meter reading.
11	"	"	"	"	"	"	A16	Adjust for maximum meter reading.
12	Check calibration and tracking of receiver with input signals of 88MC and 108MC.							



TRIMMER LOCATION CHART

CIRCLED NUMBERS CORRESPOND TO "A" ADJUSTMENT NUMBERS IN THE ALIGNMENT PROCEDURE.

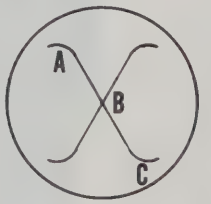


FIG 1

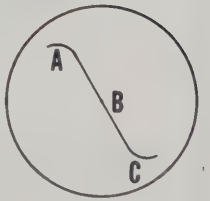


FIG 2

FOR AM ALIGNMENT SEE FRONT PAGE OF THIS FOLDER.

A9
5
7
88
86
87
85
A1
A2
101
8
A4
A3
2
A8
94
6
4
A10
93
A11
3
A12
92
A13
25
1
A7
104
89
A16
A6
A14
A5
A15
97

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	12BA6	12BA6	7BK	
2	Converter	12BE6	12BE6	7CH	
3	1st IF Amp.	12BA6	12BA6	7BK	
4	2nd IF Amp.	12BA6	12BA6	7BK	
5	Discriminator	12H6	12H6	7Q	
6	Det.-AVC-AF	6AQ6	6AQ6	7BT	
7	Power Output	50B5	50B5	7BZ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEWART-WARNER PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	60	150	504980	DY-604020-150	EL-452	AF101010D4A	UP555150	▲ Filter
B	40	150		M-40-150				● "
C	40	150						■ "
D	20	25						Output Cathode Bypass
9	5	50	504937		TA-55		BR550	Stabilizing Cap.
10	.02	400	505083	MPH-6-02	TC-11	484-02	ZY4S2	Line Filter
11	.05	400	505073	S-4-05	TC-15	484-05	DT4S5	Rectifier Bypass
12	.2	400	505071	S-4-2	TC-2	484-2	DT4P2	Feedback
13	.01	400	505027	S-4-01	TC-11	484-01	ZY4S1	Output Plate Bypass
14	.05	200	505028	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
15	.01	400	505027	S-4-01	TC-11	484-01	ZY4S1	RF Bypass
16	.02	150	505082	S-4-02	TC-12	484-02	ZY1S2	AVC Filter
17	.05	200	505028	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
18	.05	200	505028	S-4-05	TC-15	484-05	DT4S5	AVC Filter
19	.08	400	505211	S-4-1	TC-1	484-.1	DT4P1	1st IF Decoupling
20	.05	150	505028	S-4-05	TC-15	484-05	ZY1S5	1st IF Cath. Bypass
21	.05	400	505454					Line Isolation*
22	.01	400	505027	S-4-01	TC-11	484-01	ZY4S1	RF Bypass
23	.05	400	505073	S-4-05	TC-15	484-05	DT4S5	AVC Filter
24	.002	600	505052	S-6-002	TC-22	684-002	DT6D2	RF Bypass
25	.02	200	504725	S-4-02	TC-12	484-02	ZY2S2	Ext. Ant. Isolation
26	.01	400	505027	S-4-01	TC-11	484-01	ZY4S1	RF Bypass
27	.01	400	505027	S-4-01	TC-11	484-01	ZY4S1	" "
28	10000	150	504979		1FM-11			" " ‡
29	22	500	504973	MO.5-425	1FM-32	1468-000025	5W5Q25	Feedback
30	10000	150	504979		1FM-11			RF Bypass
31	100	350	505025	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
32	2000	150	504977		1FM-22	1467-002	1W5D2	Audio Coupling
33	1000	150	504979		1FM-11			De-emphasis
34	100	350	505025	MO.5-31	1FM-31	1468-0001	5W5T1	Diode Load Cap.
35	10000	150	504979		1FM-11			RF Bypass Pwr. Supply
36	5000	150	504978		1FM-25	1467-005	1W5D5	2nd IF Decoupling
37	1500	150	504976		1FM-215	1467-0015	1W5D15	Filament Bypass
38	5000	150	504978		1FM-25	1467-005	1W5D5	AVC Filter
39	150	350	505026	MO.5-315	1FM-315	1468-00015	5W5D15	Diode RF Filter
40	150	350	505026	MO.5-315	1FM-315	1468-00015	5W5D15	" " "
41	1500	150	504976			1467-0015	1W5D15	Filament Bypass
42	10000	150	504979		1FM-11			RF Bypass Pwr. Supply
43	10000	150	504979		1FM-11			Osc. Feedback
44	22	500	504973	MO.5-425	1FM-32	1468-000025	5W5Q25	Conv. Cathode Bypass
45	3	500	504730					Osc. Feedback
46	10000	150	504979		1FM-11			" "
47	470	350	504975	MO.5-35	1FM-35	1468-0005	5W5T5	RF Bypass
48	47	500	504974	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
49	33	350	505072	MO.5-43	1FM-335	1468-00004	5W5Q3	" " "
50	10	500	502295	MO.5-41	1FM-41	1468-00001	5W5Q1	RF Coupling
51	15	500	505053					" "
52	470	350	504975	MO.5-35	1FM-35	1468-0005	5W5T5	RF Screen Bypass
53	100	350	505025	MO.5-31	1FM-31	1468-0001	5W5T1	RF Cathode Bypass
54	1500	150	504976		1FM-215	1467-0015	1W5D15	Filament Bypass
55	47	500	504974	MO.5-45	1FM-45	1468-00005	5W5Q5	RF Coupling
56	470	350	504975	MO.5-35	1FM-35	1468-0005	5W5T5	RF Bypass ‡
105	1500	150	504976		1FM-25	1467-0015	1W5D15	Fil. Bypass

*This is a special inductive cap. reasonant at 455KC. Do not substitute ordinary capacitor.
‡Not used in models not having letter "S" or "H" stamped near serial number.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
57A	1 Meg.	½	504967	D11-137	AM-61-S	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 57A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
58	33Ω	½	504969	BW-½-33	Or.-Or.-Blk. Parasitic Suppressor
59	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. RF Grid
60	68Ω	½	502794	BW-½-68	Blue-Gray-Blk. RF Cathode
61	220KΩ	½	502133	BTS-220K	Red-Red-Yl. Line Isolation
62	22KΩ	½	502130	BTS-22K	Red-Red-Or. Oscillator Grid
63	1500Ω	½	502406	BTS-1500	Br.-Grn.-Red Conv. Screen Load
64	68Ω	½	502794	BW-½-68	Blue-Gray-Blk. IF Cathode
65	680Ω	½	502287	BTS-680	Blue-Gray-Br. IF Decoupling
66	33KΩ	½	504710	BTS-33K	Or.-Or.-Or. Diode RF Filter
67	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. AVC Network
68	1 Meg.	½	502268	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
69	10Ω	½	504968	BW-½-10	Br.-Blk.-Blk. 2nd IF Cathode
70	680Ω	½	502287	BTS-680	Blue-Gray-Br. 2nd IF Decoupling
71	3300Ω	½	502514	BTS-3300	Or.-Or.-Red De-emphasis
72	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. AVC Network
73	10 Meg.	½	502136	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
74	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
75	68KΩ	½	504710	BTS-68K	Blue-Gray-Or. Ratio Detector Load-See Note
76	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. AVC Network
77	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. Output Grid
78	150Ω	½	504437	BW-½-150	Br.-Grn.-Br. Output Cathode
79	2.2 Meg.	½	502135	BTS-2.2 Meg.	Red-Red-Grn. Delayed AVC Network
80	2200Ω	½	504971	BTS-2200	Red-Red-Red Filter
81	470Ω	2	504970	BT-2-470	Yl.-Vi.-Br. Filter
82	33Ω	1	505023	BW-1-33	Or.-Or.-Blk. Surge Limiter
83	22Ω	2	505024	BW-2-22	Red-Red-Blk. Pilot Light Shunt
84	100KΩ	½	502132	BTS-100K	Br.-Blk.-Yl. Feedback

Note-In chassis not stamped with letter H, 33KΩ is used in this application.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
85	2300Ω	3.9Ω	230Ω	.55Ω	502904	A-3876#	T22545#	A-2928#	#Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-107†		†Fabricate new mounting bracket.
86	PM	3.9Ω	A502998	Mod. P5-V		
	CONE DIA.	VC DIA.				
87	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

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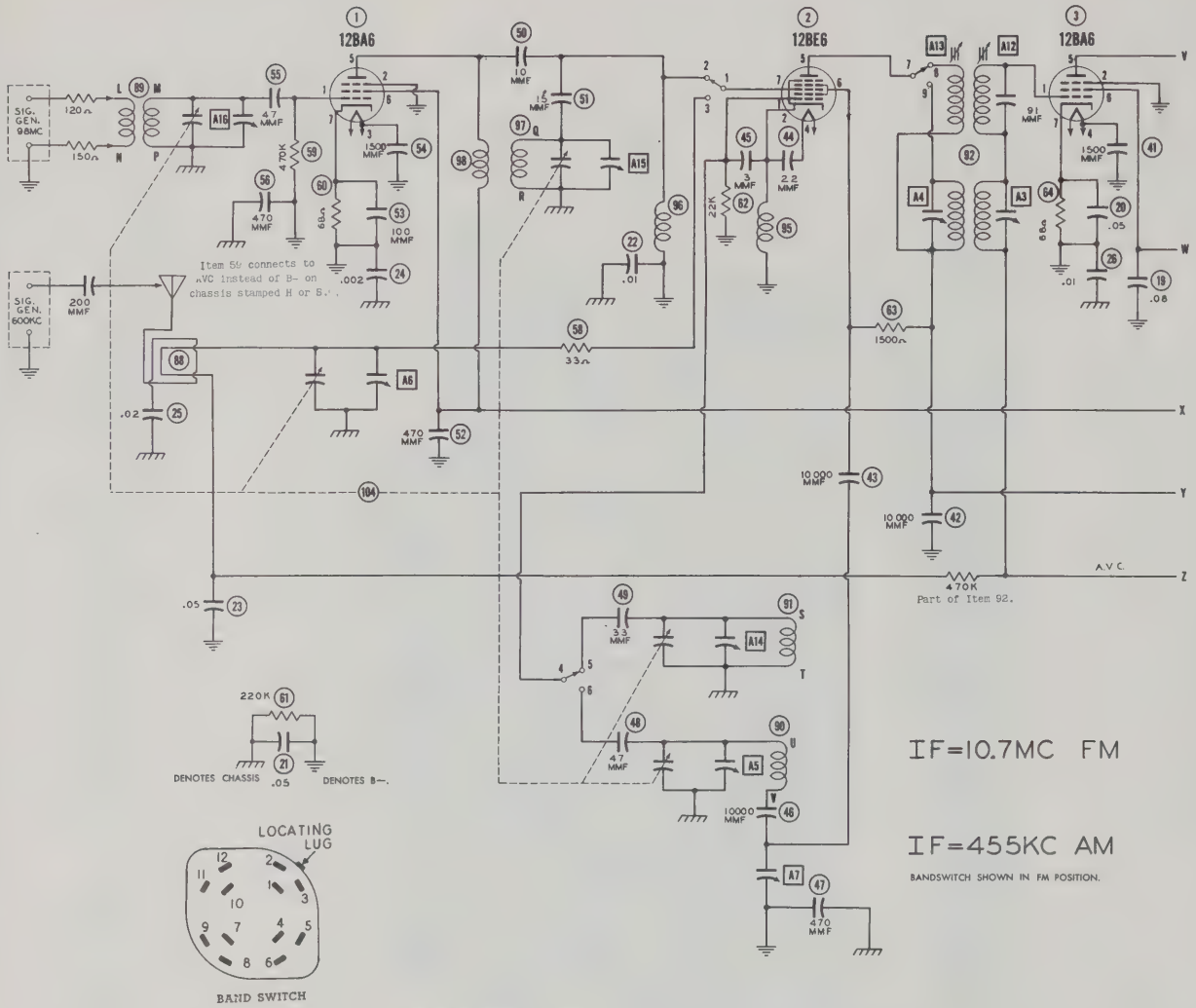

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	12BA6	-.25VDC	0V.	42VAC	30VAC	105VDC	105VDC	1VDC	-
	2	12BE6	-7.8VDC§	0V.	30VAC	18VAC	95VDC	85VDC	0V.	-
	3	12BA6	0V.	0V.	42VAC	54VAC	95VDC	95VDC	1.4VDC	-
‡	4	12BA6	-.35VDC	0V.	54VAC	6.6VAC	95VDC	95VDC	.2VDC	-
‡	5	12H6	0V.	6VAC	-.3VDC	-.1VDC	-.1VDC	0V.	18VAC	0V.
	6	6AQ6	-.35VDC	0V.	0V.	6VAC	-.25VDC	0V.	40VDC	-
	7	50B5	0V.	6.2VDC	66VDC	115VAC	115VDC	95VDC	0V.	-

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	12BA6	3 Meg.	0Ω	42Ω	30Ω	150KΩ	150KΩ	70Ω	-
	2	12BE6	22KΩ	0Ω	30Ω	18Ω	150KΩ	150KΩ	2.5 Meg.	-
	3	12BA6	2 Meg.	0Ω	42Ω	54Ω	150KΩ	150KΩ	68Ω	-
‡	4	12BA6	2 Meg.	0Ω	54Ω	6.6Ω	150KΩ	150KΩ	10Ω	-
‡	5	12H6	220KΩ	6.5Ω	30KΩ	INF.	INF.	0Ω	18Ω	0Ω
	6	6AQ6	10 Meg.	0Ω	0Ω	6.5Ω	1.2 Meg.	500KΩ	650KΩ	-
	7	50B5	470KΩ	150Ω	65Ω	112Ω	150KΩ	150KΩ	470KΩ	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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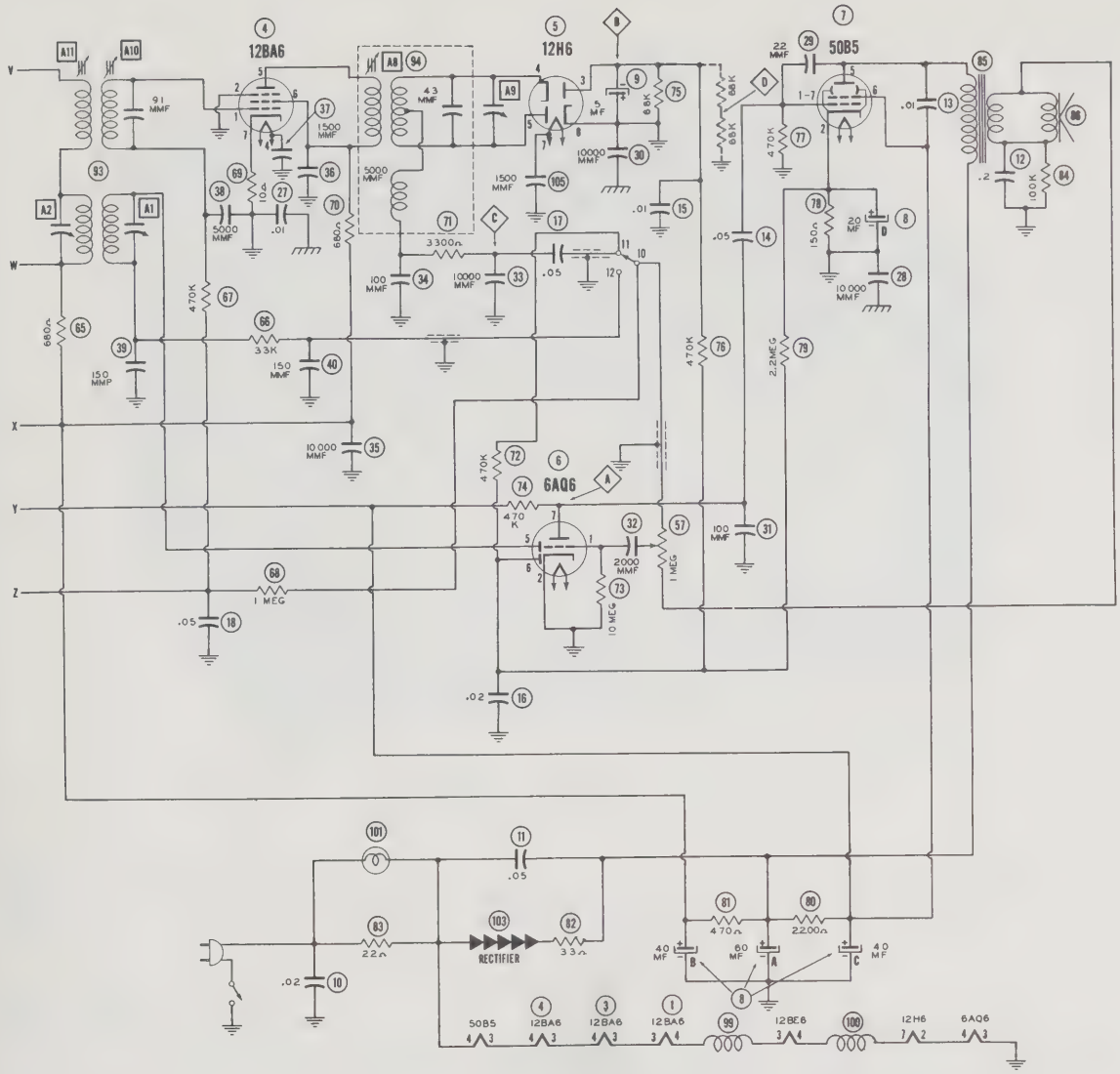
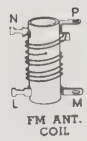
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.





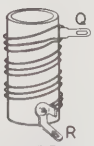
FM ANT. COIL

BC. OSC. COIL

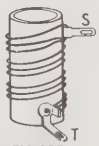
STAGE GAIN MEASUREMENTS			
ANTENNA TO CONVERTER GRID	2X		600KC
CONVERTER GRID TO 1st IF GRID	40X	IN OUT	600KC 455KC
1st IF GRID TO DIODE	55X		455KC
AUDIO	35X		400~
OUTPUT	12X		400~

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. Observe the following instructions and precautions.

1. Use the 600KC signal with 400-cycle modulation connected as shown on schematic. (Use nearby frequency if local station interferes.)
2. For RF and IF measurements, connect negative terminal of 1.5 volt battery to AVC line and connect positive terminal to B-.
3. Be sure radio is carefully tuned to signal generator frequency. (Use weak signal for sharper tuning.)



FM R.F. COIL



FM OSC. COIL

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PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

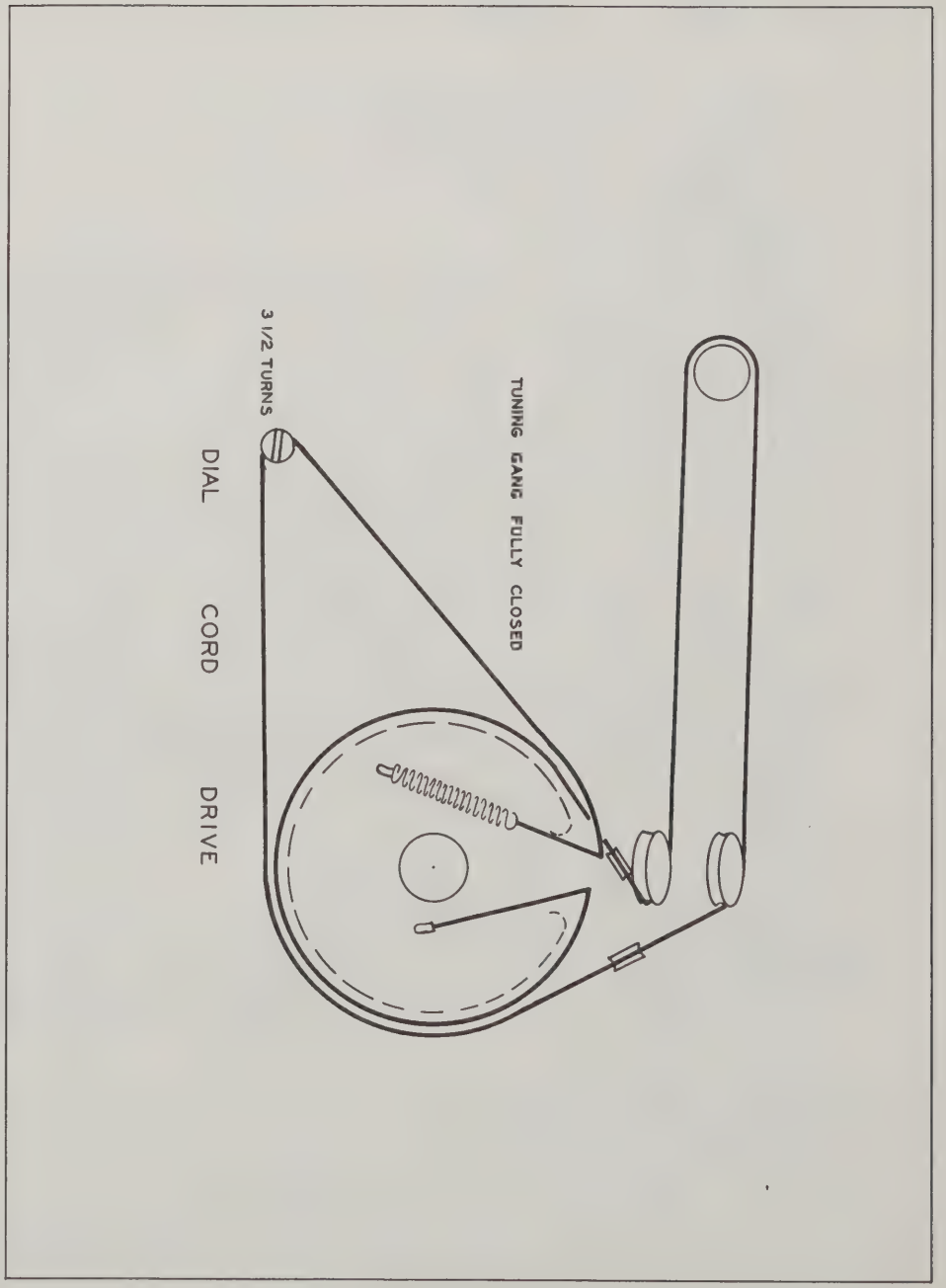
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA STEWART-WARNER PART No.	REPLACEMENT DATA MEISSNER PART No.	
88	Loop Ant.	.5Ω	2Ω	505054		
89	FM Ant.Coil	0Ω	0Ω	505062		
90	BC Osc. "		5Ω	505042	14-1040	
91	FM " "		0Ω	505060		
92A	AM Input IF	20Ω	27Ω			
B	FM " "	1.5Ω	.5Ω	505066		92A & B mounted in same can
93A	AM Output IF	18Ω	16Ω			
B	FM " "	2.5Ω	.5Ω	505067		93A & B mounted in same can
94	Disc. Trans.	1.5Ω	.5Ω	505391		
95	Conv. Cath. Choke		0Ω	505076		
96	Conv. Grid Coil		0Ω	505076		
97	FM RF Coil		0Ω	505060		
98	FM RF Plate Chk.		0Ω	505075		
99	Filament Chk		1Ω	505392		
100	" "		1Ω	505392		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA STEWART-WARNER PART No.		INSTALLATION NOTES
101	Bayonet	6-8	0.25	Blue	110629		Type 44

MISCELLANEOUS

ITEM No.	PART NAME	STEWART-WARNER PART No.	NOTES
102	Switch	504938	Band
103	Rectifier	504972	Selenium
104	Tuning Cap.	504955	AM (14-461MMF, 14-461 MMF)
A5	Trimmer	119491	BC Osc. Adj.
A6	"	504069	BC Ant. Adj.
A7	Padder	505051	BC Osc. Adj.
	Trimmer	504954	A9, A14, A15, A16
	Dial Scale	505085	Models A72T1, A72T2
	" "	505092	Models A72T3, A72T4
	Dial Pointer	502690	



PHOTOFACT* Folder

TRAV-LER MODELS 5030, 5031

TRAV-LER MODELS 5030, 5031

TRAV-LER MODELS 5030, 5031

TRADE NAME	Trav-ler, Models 5030, 5031
MANUFACTURER	Trav-ler Radio and Tele., 571 W. Jackson Blvd., Chicago, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne with Loop Antenna
TUBES (FOUR)	Types, 14Q7 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output or Octal Type Tube Equivalents.
POWER SUPPLY	110-125 Volts AC
TUNING RANGE—BROADCAST	540 - 1720KC RATING .230 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a capacitor in series with the low side of the signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output from signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning Cap. fully open	Across Voice Coil	A1, A2, A3, A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFDto reduce hum modulation.
2	"	"	1720KC	"	"	A5	"
3	200MMF.	High side to ext. ant. lead. Low side to chassis.	1400KC	Tune for max. output.	"	A6	Adjust for maximum output.
4	"	"	600KC	"	"	A7	Rock tuning capacitor and adjust for maximum output. Repeat steps 2,3,&4 until no increase in output is obtained

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs.
2. Remove four screws holding chassis mounting board to cabinet. Remove board.
3. Remove one hex nut holding loop antenna to cabinet.
4. Remove two bolts holding mounting board to chassis. Remove chassis.
5. Remove phono motor plug from chassis.
6. Remove phono pick-up plug from chassis.

HOWARD W. SAMS & CO., INC. **Indianapolis 6, Indiana**

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DATE 1/48 SET #32 FOLDER #482-25

PARTS LIST AND DESCRIPTIONS

TRAV-LER MODELS
5 3c, 1 31

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	Converter	14Q7	14Q7	8AL	
B	"	12SA7	12SA7	8R	
2A	IF Amp.	14A7	14A7	8V	
B	"	12SK7	12SK7	8N	
3A	Det.-AVC-AF	14B6	14B6	8W	
B	"	12SQ7	12SQ7	8Q	
4A	Power Output	50A5	50A5	6AA	
B	"	50L6	50L6	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	EC-10	M-2x40-150	TA-440	PRSA150-40-40	BRD4415	Filter - Red
B	40	150						" "
6	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	Line Filter
7	.01	400	PC-7	S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
8	.005	600	PC-10	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
9	.005	600	PC-10	S-6-005	TC-25	684-005	DT6D5	" "
10	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	AVC Filter
11	.1	400	PC-8	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
12	.01	400	PC-7	S-4-01	TC-11	484-01	DT4S1	Ext. Ant. Coupling‡
13	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	Phono Isolation
14	500	500	MC-5	MO.5-35	1FM-35	1468-0005	5W5T5	Audio Plate Bypass
15	100	500	MC-2	MO.5-31	1FM-31	1468-0001	5W5T1	Diode Filter
16	50	500	MC-4	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
17	500	500	MC-5	MO.5-35	1FM-35	1468-0005	5W5T5	Phono Coupling

‡ Not used in all models

CONTROLS

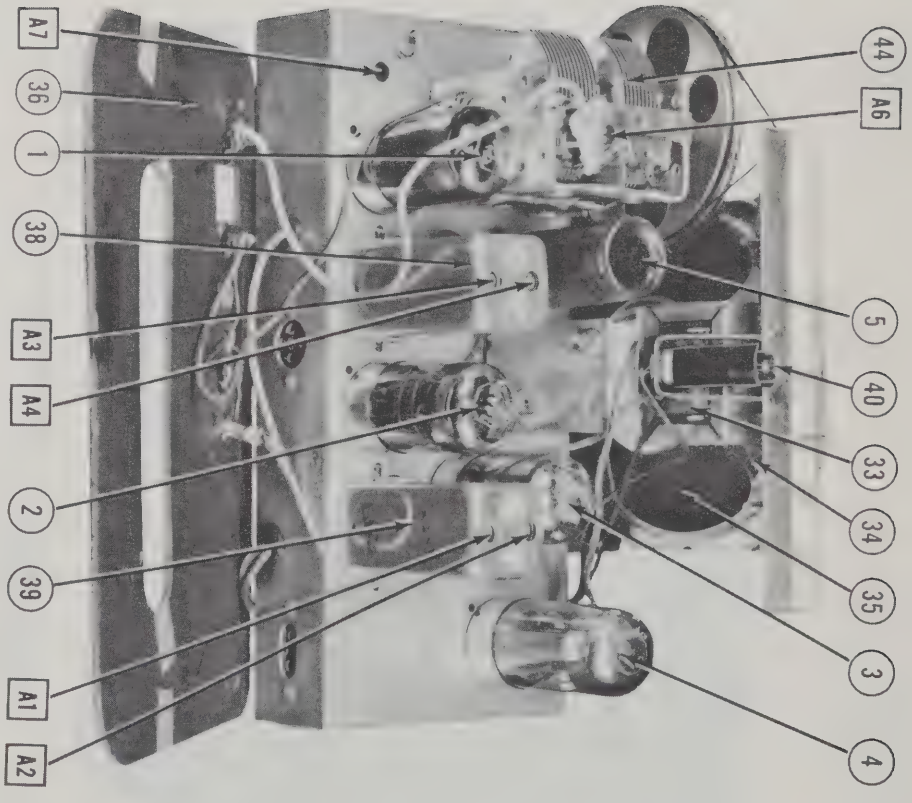
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18A	1 Meg	1	VC-4	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 18A Per Instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	IDENTIFICATION CODES
19	22KΩ	½	IR-9	BTS-22K	Red- Red - Or. Oscillator Grid
20	220KΩ	½	IR-20	BTS-220K	Red - Red - Yl. Line Isolation
21	3.3 Meg.	½		BTS-3.3Meg	Or. - Or.- Grn. AVC Network See Note 1
22	470KΩ	½	IR-11	BTS-470K	Yl. - Vi. - Yl. Series Phono
23	50KΩ	½	IR-10	BTS-47K	Grn. - Blk. - Or. Diode RF Filter
24	2.2 Meg.	½	IR-13	BTS-2.2Meg	Red - Red - Grn. AF Grid
25	470KΩ	½	IR-11	BTS-470K	Yl. - Vi. - Yl. AF Plate Load
26	470KΩ	½	IR-11	BTS-470K	Yl. - Vi. - Yl. Output Grid
27	150Ω	½	IR-14	BW-½-150	Br. - Grn. - Br. Output Cathode
28	220KΩ	½	IR-20	BTS-220K	Red - Red - Yl. Phono Shunt
29	470Ω	½	IR-1	BTS-470	Yl. - Vi. - Br. IF Cathode See Note 2
30A	30Ω	5	WR-5	BW-2-33	Pilot Light Shunt See Note 3
B	165Ω	5	WR-5	ABA-200	Series Filament See Note 4
31	82Ω	2	IR-35	BW-2-82	Gray - Red - Blk. Surge Limiter
32	2200Ω	1	IR-25	BTA-2200	Red - Red - Red Filter

NOTE 1: Some models use 3.9Meg in this application. IRC replacement BTS-3.9Meg
NOTE 2: Not used in all models.
NOTE 3: Some models use a 33Ω 2 Watt Resistor in this application. Replacement Same as Item 30A
NOTE 4: Some models use 200Ω 5 Watt and 820Ω ½ Watt resistors in parallel in this application. On IRC replacement, set slider 165Ω from one end.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRAV-LER PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
33	6400Ω	3.1Ω	250Ω	.4Ω	Part of SPK-5	A-3878*	T22S46*	A-2931*	* Bend mounting tabs down, file out slots and mount on original bracket

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRAV-LER PART No.	JENSEN PART No.		
34	FIELD P.M.	V.C. IMP. 3.1Ω	SPK-5	ST-105 † Mod. P5-X		† Drill and tap magnet frame. Trim flange.
35	CONE DIA. 4-3/4"	V.C. DIA. 1/2"	NOT READILY	REPLACEABLE - USE COMPLETE SPEAKER UNIT.		

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	TRAV-LER PART No.	MEISSNER PART No.
36	Loop Ant.	.1Ω	1.2Ω	LL-7	
37	Osc. Coil		6.5Ω	LO-7	14-1040
38	Input IF	19Ω	19Ω	LI-1	16-6658
39	Output IF	20Ω	20Ω	LI-2	16-6660

DIAL LIGHT

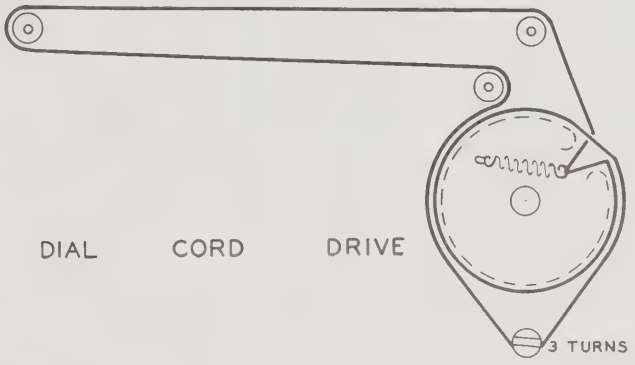
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRAV-LER PART No.		
40	Bayonet	6-8	0.15	Brown	PB-1		Type 47

PHONO CARTRIDGE

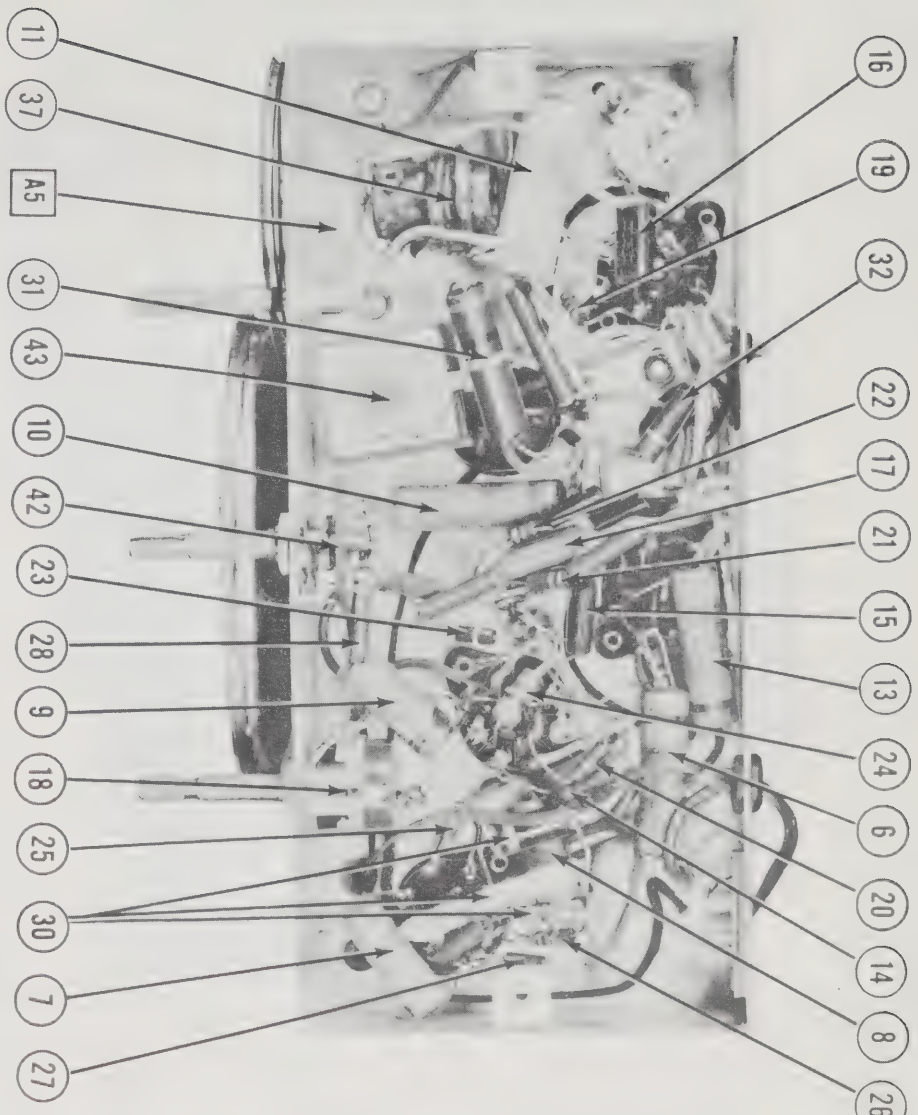
ITEM No.	REPLACEMENT DATA		REMARKS
	TRAV-LER PART No.	ASTATIC PART No.	
41	L-75	L-75-A	

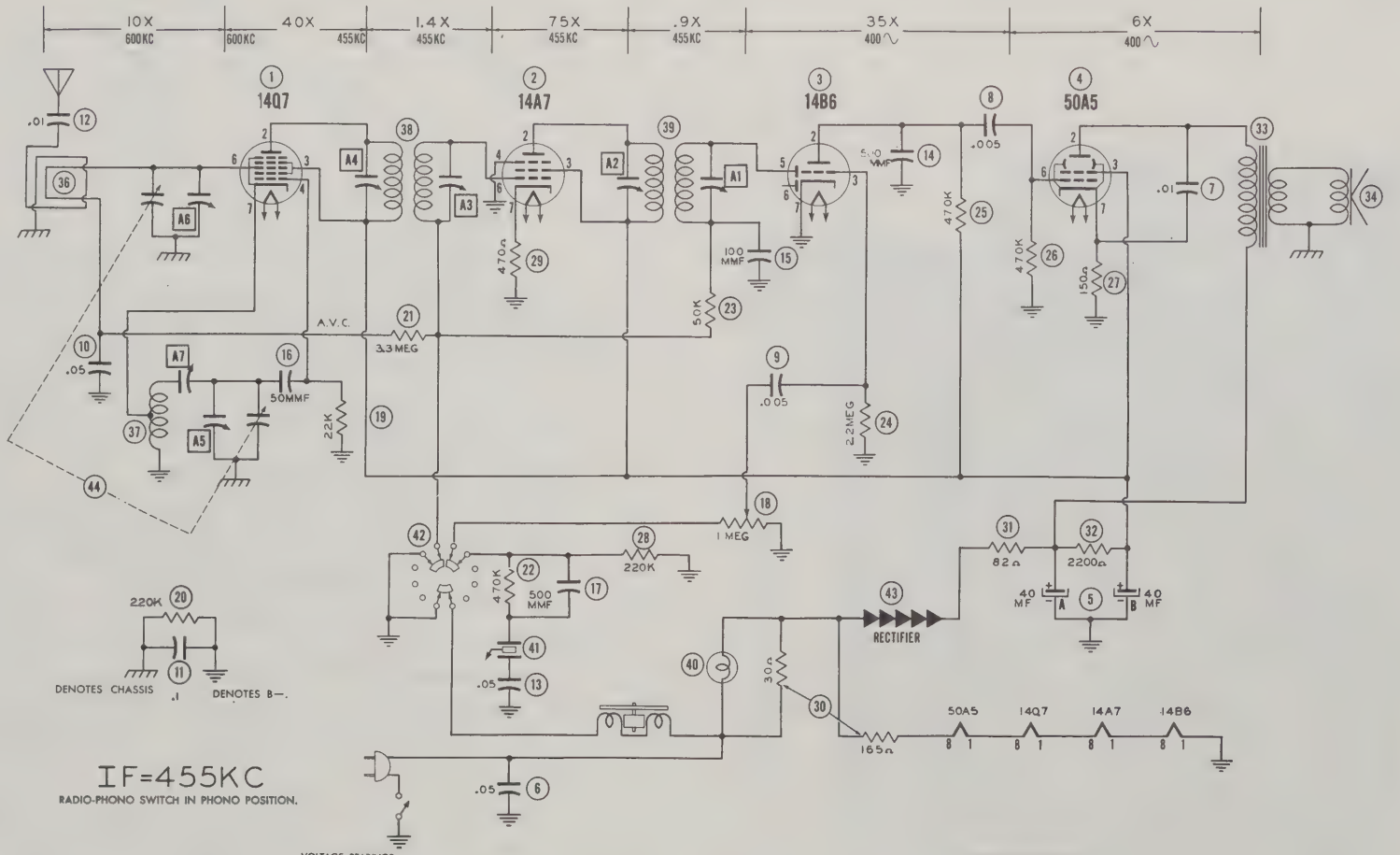
MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
42	Switch	SW-1	Radio-Phono
43	Rectifier	SR-1	Selenium
44	2 Gang Var. Cap	GC-1	16-562MMF, 15-475MMF
A5	Trimmer	TC-6	Osc. Adj.
A6	"	TC-7	Ant. Adj.
A7	"	TC-9	Osc. Padder



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	25VAC	77VDC	77VDC	-3.8VDC	0V.	-.5VDC	0V.	37VAC
2	14A7	12VAC	77VDC	77VDC	0V.	0V.	-7VDC§	0V.	25VAC
3	14B6	12VAC	57VDC	-.8VDC	0V.	-.4VDC	0V.	0V.	0V.
4	50A5	37VAC	113VDC	77VDC	112VAC	117VAC	0V.	5.5VDC	88VAC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	22Ω	60KΩ	60KΩ	20KΩ	0Ω	3 Meg.	.5Ω	34Ω
2	14A7	11Ω	60KΩ	60KΩ	0Ω	230KΩ	3 Meg.	0Ω	22Ω
3	14B6	11Ω	500KΩ	2.2 Meg.	0Ω	1 Meg.	INF.	0Ω	0Ω
4	50A5	34Ω	60KΩ	60KΩ	220Ω	225Ω	440KΩ	140Ω	75Ω

RADIO-PHONO SWITCH IN RADIO POSITION.
§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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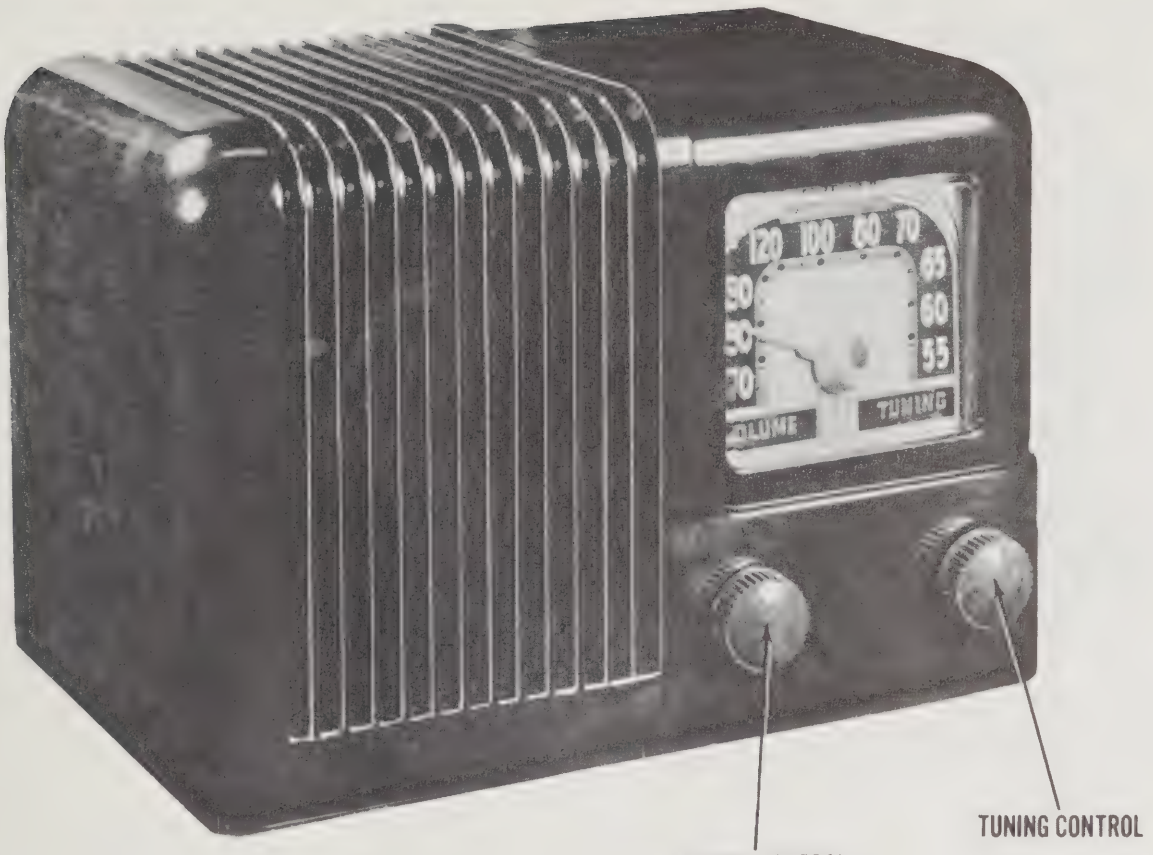
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRAV-LER MODEL 5051



TRAV-LER MODEL 5051

TRAV-LER MODEL 5051

TRADE NAME	Trav-ler, Model 5051
MANUFACTURER	Trav-ler Radio and Tel. Corp., 571 W. Jackson St., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 14Q7 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1720KC RATING .22 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to frame of tuning cap.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not reduce dummy ant. to .001 MFD to reduce hum modulation.
2	.1 MFD.	"	1720KC	"	"	A5	Adjust for maximum output.
3	200MMFD	High side to ext. ant. lead. Low side to B-.	1400KC	Tune for maximum output.	"	A6	" " " "

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DATE 1/48 SET #32 FOLDER #482-26

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	14A7	14A7	8AL	
2	IF Amp.	14A7	14A7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150		DSB-2x40-150	TA440	PRSA150-40-40	BRD4415	Filter - Red
B	40	150						" - "
7	.05	400	PC-5	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.01	400	PC-7	S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
9	.005	600	PC-6	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
10	.005	600	PC-6	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
11	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	.1	400	PC-9	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
13	.01	400	PC-7	S-4-01	TC-11	484-01	DT4S1	Ant. Coupling
14	100	500	MC-2	MO.5-31	1FM-31	1468-0001	5W5T1	Diode Filter
15	50	500	MC-4	MO.5-45	1FM-45	1468-00005	5W5T5	Osc. Grid Cap.
16	470	500	MC-5	MO.5-35	1FM-25	1468-0005	5W5T5	Audio Plate Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	1 Meg.	½	VC-3	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	41	SW-A	" " " " "

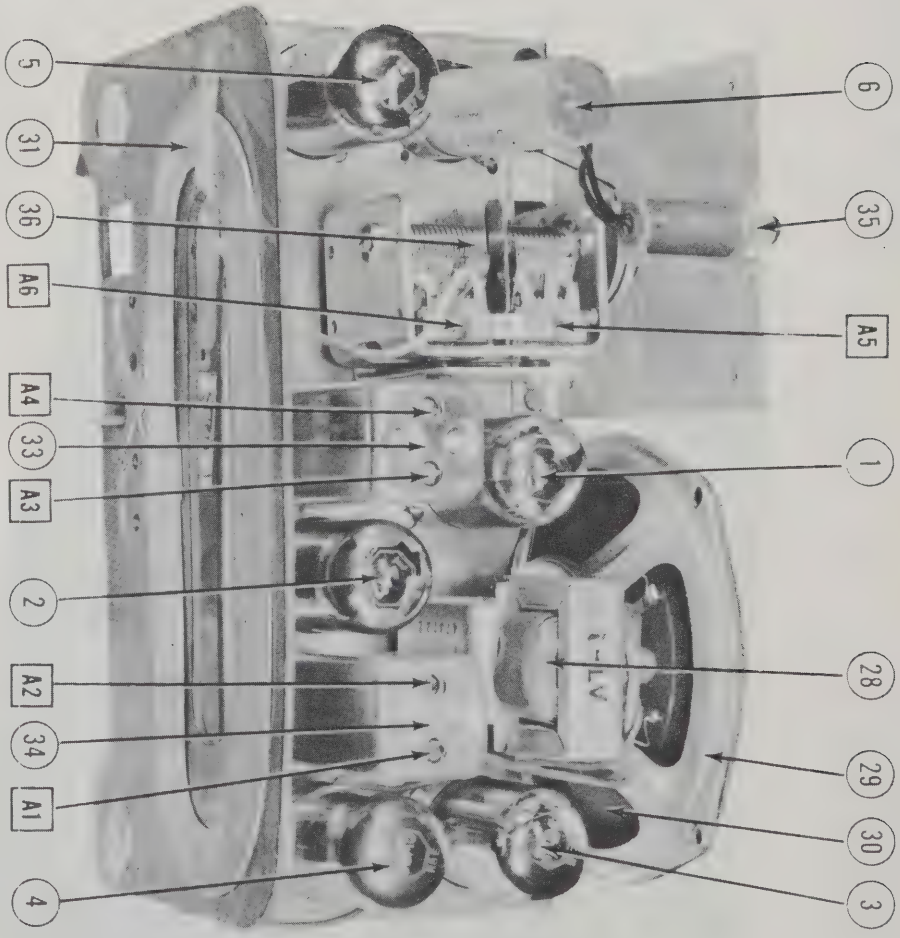
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	IDENTIFICATION CODES
18	33KΩ	½	IR-16	BTS-33K	Or.-Or.-Or. Osc. Grid
19	220KΩ	½	IR-20	BTS-220K	Red-Red-Yl. Line Isolation
20	3.3 Meg.	½	IR-23	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
21	47KΩ	½	IR-10	BTS-47K	Yl.-Vi.-Or. IF Filter
22	2.2 Meg.	½	IR-13	BTS-2.2 Meg.	Red-Red-Grn. AF Grid Load
23	470KΩ	½	IR-11	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
24	150Ω	½	IR-14	BW-½-150	Br.-Grn.-Br. Output Cathode
25	470KΩ	½	IR-11	BTS-470K	Yl.-Vi.-Yl. Output Grid
26	2000Ω	1	IR-15	BTA-2200	Red-Blk.-Red Filter
27	47Ω	½	IR-4	BW-½-47	Yl.-Vi.-Blk. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRAV-LER PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
28A	2600Ω	3.0Ω	270Ω	.7Ω	Part of SPK-9	A-3876*	T22S45*	A-2928*	*Bend mounting tabs down file out slots and mount on original bracket.
B					Part of SPK-4				Used with alternate speaker.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA TRAV-LER PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
29A	PM	3.0Ω	SPK-9	Mod. P5-X		
B			SPK-4			Alternate Speaker
	CONE DIA.	VC DIA.				
30	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

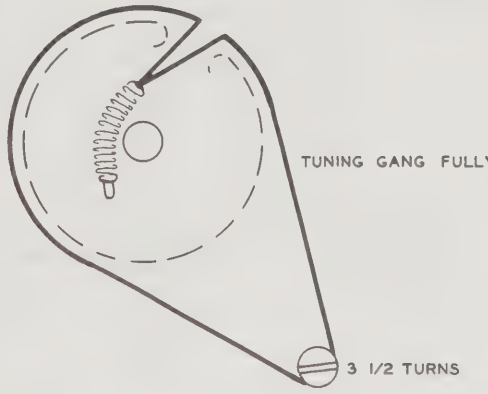
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRAV-LER PART No.	MEISSNER PART No.
31	Loop Ant.	0Ω	1.5Ω	LL6	
32	Osc. Coil		6.5Ω	LO11	14-1040
33	Input IF	19Ω	19Ω	LI1	16-6666
34	Output IF	20.5Ω	19Ω	LI2	16-6667

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA TRAV-LER PART No.		INSTALLATION NOTES
35	Bayonet	6-8	0.15	Brown	PB-1		Type 47

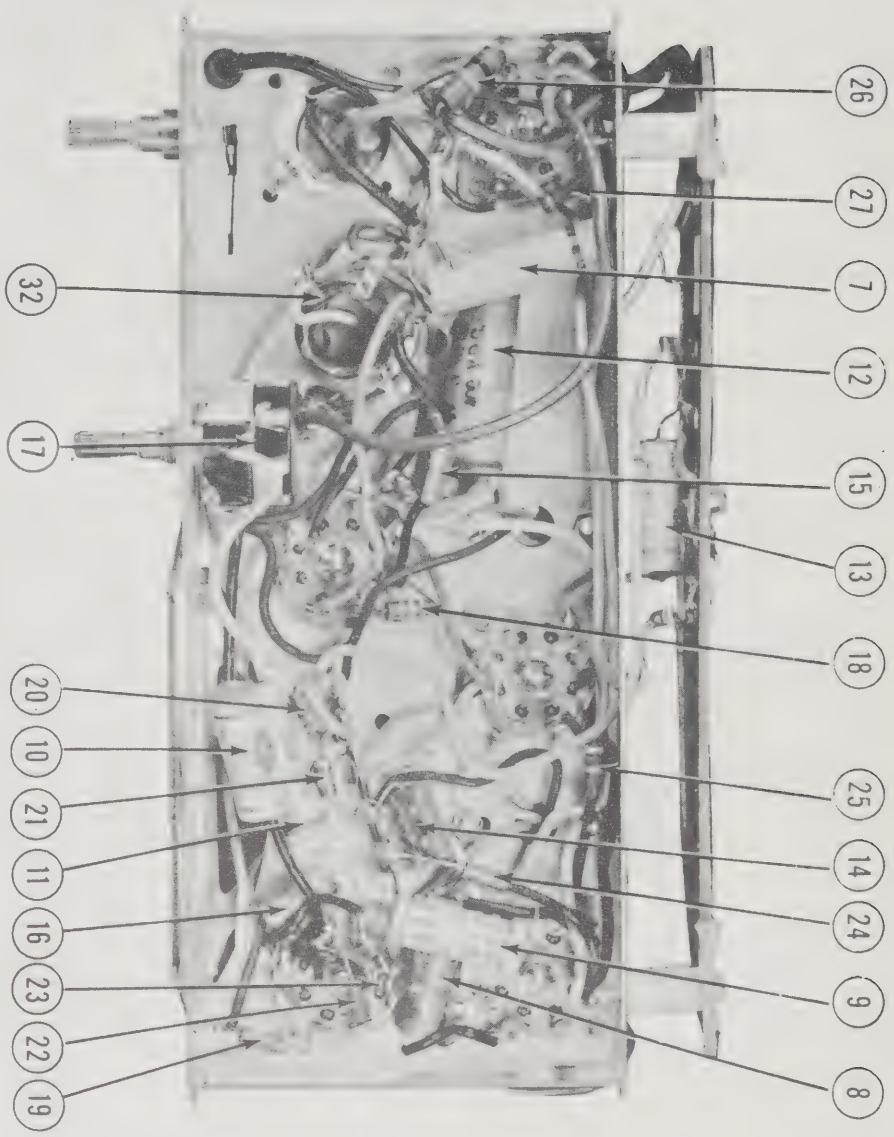
MISCELLANEOUS

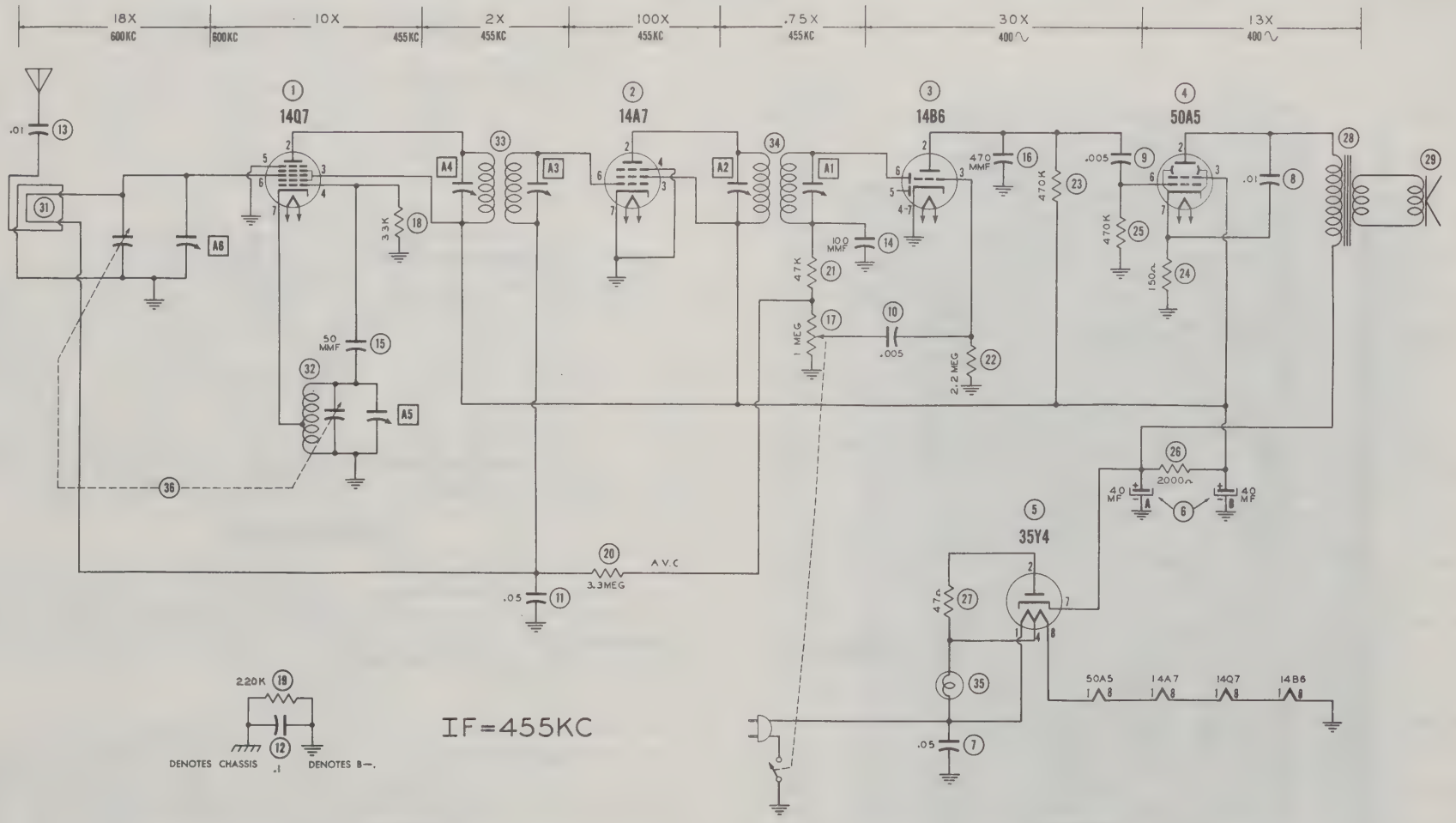
ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
36	2 Gang Var. Cap.	GC-4	(50-216MMF, 37-468MMF)
A6	Trimmer	TC-7	Ant. Adj.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	27VAC	71VDC	71VDC	-12VDC§	0V.	-.4VDC	0V.	13VAC
2	14A7	39VAC	71VDC	71VDC	0V.	0V.	-.4VDC	0V.	27VAC
3	14B6	13VAC	52VDC	-.4VDC	0V.	-.2VDC	0V.	0V.	0V.
4	50A5	87VAC	105VDC	71VDC	0V.	112VDC	0V.	4.4VDC	39VAC
5	35Y4	117VAC	108VAC	0V.	113VAC	0V.	0V.	112VDC	17VAC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	25Ω	30KΩ	30KΩ	35KΩ	0Ω	4 Meg.	.8Ω	13Ω
2	14A7	38Ω	30KΩ	30KΩ	0Ω	250KΩ	4 Meg.	0Ω	25Ω
3	14B6	13Ω	500KΩ	2.2 Meg.	0Ω	1 Meg.	INF.	0Ω	0Ω
4	50A5	85Ω	30KΩ	30KΩ	INF.	30KΩ	460KΩ	150Ω	38Ω
5	35Y4	112Ω	170Ω	INF.	110Ω	INF.	INF.	30KΩ	85Ω

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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482-26

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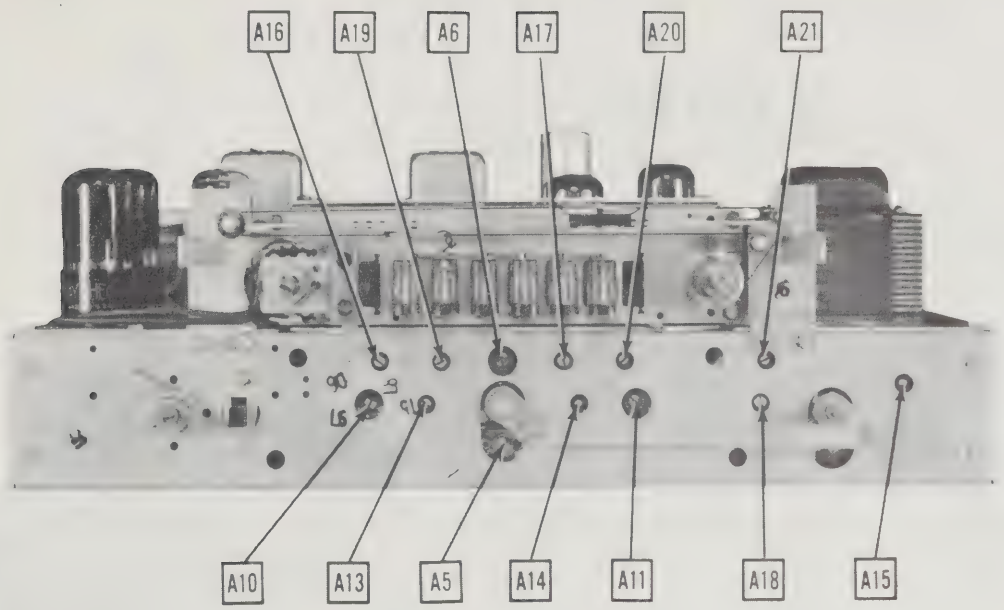
1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**



TRUETONE MODEL D1747

TRADE NAME	Truetone, Models D1747, D1748
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC Operated Combination Phono-Radio Multi-Band Superheterodyne with Loop Antenna
TUBES (EIGHT)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6J5 Phase Inv., (2) 6K6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	105-125 Volts AC RATING .700 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC SHORT WAVE 5.96-6.19MC, 9.1-10MC, 11.45-12.16MC, 14.94-15.46MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer rotate manual tuning control until core bar is 1/32" from 2 rod guide angles. Set pointer per sketch at 1600KC reference mark on back of dial backplate. Rotate cores of three BC coils until end of core is 1-5/32" from end of coil form. Rotate the three SMC coil cores until the dimension is 1-1/16" from end of coil form. (As per sketch).

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 6SA7. Low side to chassis.	455KC	BC	1600KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	200MMFD	High side to ext. ant. lead. Low side to ext. ground lead.	1600KC	"	1600KC reference mark on back of dial backplate.	"	A5,A6, A7	" " " "
3	200MMFD	"	1400KC	"	Tune for maximum output.	"	A8,A9	Adjust slugs for maximum output. Recheck A5,A6,A7 at 1600KC.
4	400Ω	"	9.6MC	31 meter	9.6MC reference mark on back of dial backplate.	"	A10,A11 A12	Adjust for maximum output
5	400Ω	"	6.1MC	49 meter	6.1MC reference mark on back of dial backplate.	"	A13, A14,A15	" " " "
6	400Ω	"	11.8MC	25 meter	11.8MC reference mark on back of dial backplate.	"	A16, A17,A18	" " " "
7	400Ω	"	15.2MC	19 meter	15.2MC reference mark on back of dial backplate.	"	A19,A20, A21	" " " "

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DATE 1/48 SET #32 FOLDER #482-27

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Phase Inv.	6J5	6J5	6Q	
6	Power Output	6K6GT	6K6GT	7S	
7	" "	6K6GT	6K6GT	7S	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	15	450	119109	DY-3x15-450	EL-344	AF444J	UP15D145	■ Filter
B	15	450						▲ "
C	10	350						"
10	.02	600	C-8J-11321	MPH-6-02	TC-12	684-02	DT6S2	Line Filter
11	.02	600	C-8J-11321	MPH-6-02	TC-12	684-02	DT6S2	" "
12	.004	600	C-8D-10788	S-6-004	TC-24	684-004	DT6D4	Tone Comp.
13	.05	400	C-8D-10813	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
14	.05	400	C-8D-10813	S-4-05	TC-15	484-05	DT4S5	" "
15	.02	400	C-8D-10774	S-4-02	TC-12	484-02	DT4S2	" "
16	.005	600	C-8D-10935	S-6-005	TC-25	684-005	DT6D5	Tone Comp.
17	.006	600	C-8D-10785	S-6-006	TC-26	684-006	DT6D6	Audio Coupling
18	.03	200	C-8D-10992	S-6-03	TC-13	484-03	DT4S3	Tone Comp.
19	.02	400	C-8D-10774	S-4-02	TC-12	484-02	DT4S2	AVC Filter
20	.1	200	C-8D-10771	S-2-1	TC-1	484-.1	DT4P1	IF Cathode Bypass
21	.1	400	C-8D-10760	S-4-1	TC-1	484-.1	DT4P1	Screen Bypass
22	.1	400	C-8D-10760	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Power Supply
23	.1	200	C-8D-10771	S-2-1	TC-1	484-.1	DT4P1	RF Cathode Bypass
24	220	500	C-8F3-10	MO.5-32	1FM-32	1468-0002	5W5T2	AF Plate Bypass
25A	50	500	129165B	MO.5-45	1FM-45	1468-00005	5W5Q5	Diode RF Filter
B	50	500		MO.5-45	1FM-45	1468-00005	5W5Q5	" " "
26	200	500	B-8F-10763	MOS.5-32	MS-32	1469-0002	5R5T2	Fixed Trimmer
27	47		B-8F3-109	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
28	470	500	C-8F3-12	MO.5-35	1FM-35	1468-0005	5W5T5	RF Coupling
29	10	500	B-8F5-101	MOS.5-41	MS-41	1469-00001	5R5Q1	" "
30	470	500	C-8F3-12	MO.5-35	1FM-35	1468-0005	5W5T5	" "
31	2000	500	B-8F-10767	MW.5-22	1FM-22	1467-002	1W5D2	Antenna Coupling
32	470	500	C-8F3-12	MO.5-35	1FM-35	1468-0005	5W5T5	" "

CONTROLS

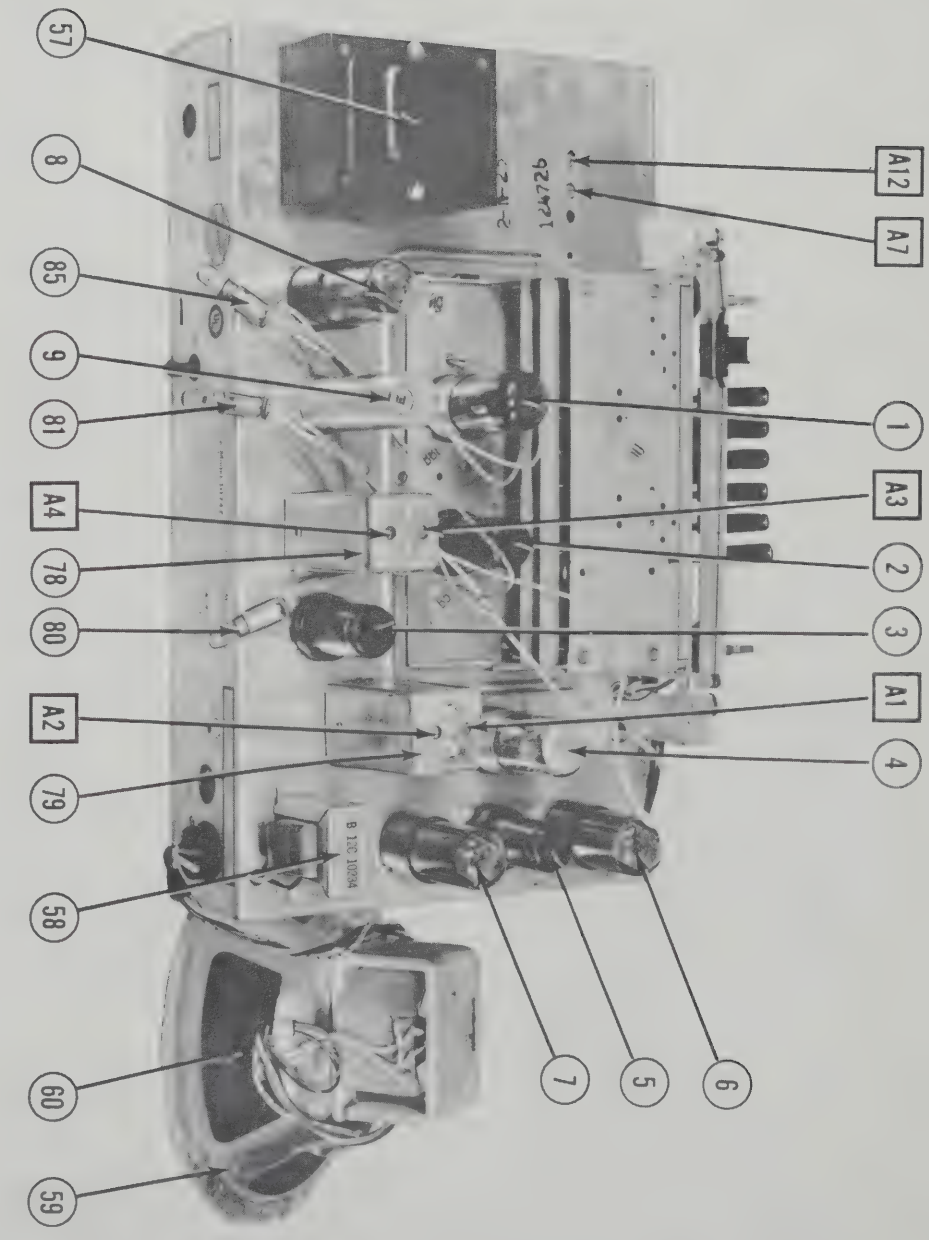
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
33	500KΩ	½	A-10A-10586			Volume Control & Sw. tapped @ 100KΩ
34A	1 Meg.	½	125180	D13-137*	AN-63-Z*	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to 34A per instructions

*Use original arm on tone control shaft to actuate radio-phono sw.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
35	22KΩ	½	C-9B1-21	BTS-22K	Red-Red-Or. Antenna Loading
36	22KΩ	½	C-9B1-21	BTS-22K	Red-Red-Or. " "
37	270Ω	½	C-9B1-55	BW-½-270	Red-Vi.-Br. RF Cathode
38	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
39	4700Ω	½	C-9B1-70	BTS-4700	Yl.-Vi.-Red RF Plate Load
40	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
41	27KΩ	½	C-9B1-79	BTS-27K	Red-Vi.-Or. Oscillator Grid
42	47Ω	½	C-9B1-46	BW-½-47	Yl.-Vi.-Blk. Parasitic Suppressor

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	
43	560Ω	½	C-9B1-59	BTS-560	Grn.-Blue-Br. IF Cathode
44	12.5kΩ	3	10662	AB-12500	Screen Dropping
45	15kΩ	½	C-9B1-20	BTS-15K	Br.-Grn.-Or. Tone Compensation
46	47kΩ	½	C-9B1-23	BTS-47K	Yl.-Vi.-Or. Diode Filter
47	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
48	4.7 Meg.	½	C-9B1-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
49	120kΩ	½	C-9B1-87	BTS-120K	Br.-Red-Yl. AF Plate Load
50	100kΩ	½	C-9B1-86	BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
51	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. Phase Inverter Grid
52	4700Ω	½	C-9B1-70	BTS-4700	Yl.-Vi.-Red Phase Inverter Cathode
53	100kΩ	½	C-9B1-86	BTS-100K	Br.-Blk.-Yl. Phase Inverter Cathode
54	470kΩ	½	C-9B1-29	BTS-470K	Yl.-Vi.-Yl. Output Grid
55	470kΩ	½	C-9B1-29	BTS-470K	Yl.-Vi.-Yl. " "
56	330Ω	1	C-9B2-56	BW-1-330	Or.-Or.-Br. Output Cathode

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	TRUETONE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
57	117V AC @ .7A	600V CT @ .096A	5.0V AC @ 2.0A	6.3V AC @ 2.8A	104202B	P-6312†	T22041†	P-2952†

†Drill new mounting hole.

TRANSFORMER (OUTPUT)

ITEM No.	RATINC				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
58	12000Ω CT	3.3Ω	670Ω CT	.4Ω	B-12C-10234	A-3856	T22S48	A-2938	

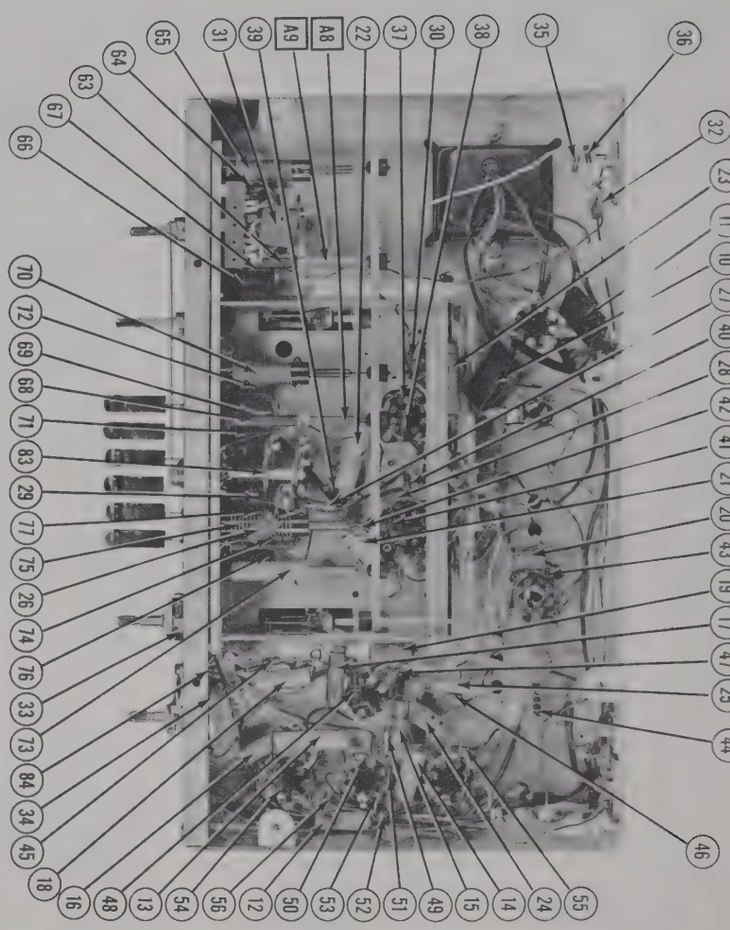
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	VC IMP.	TRUETONE PART No.	JENSEN PART No.		
59	500Ω	3.3Ω	C-18B-13181			
	CONE DIA.	VC DIA.				
60	7-3/4"	15/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
61	Loop Ant.	0Ω	.1Ω	A-14MA-11066-3		
62	Ant. Load. Coil		0Ω	A-16A-11113		
63	BC Ant. Coil		6.5Ω	111195		
64	SW " "		.1Ω	111189		
65	" " "	.1Ω	0Ω	111190		
66	" " "		0Ω	111191		
67	" " "		0Ω	111192		
68	BC RF Coil		6Ω	10962		
69	SW " "		.1Ω	10958		
70	" " "	1Ω	0Ω	10959		
71	" " "		0Ω	10960		
72	" " "		0Ω	10961		
73	BC Osc. "	.5Ω	6.5Ω	110161		
74	SW " "		.1Ω	110156		
75	" " "		0Ω	110157		
76	" " "		0Ω	110158		
77	" " "		0Ω	110159		
78	Input IF	20Ω	20Ω	108177		
79	Output IF	10Ω	95Ω	108176		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRUETONE PART No.		
80, 81,85	Bayonet	6-8	0.25	Blue	10794		Type 44

PHONO CARTRIDGE

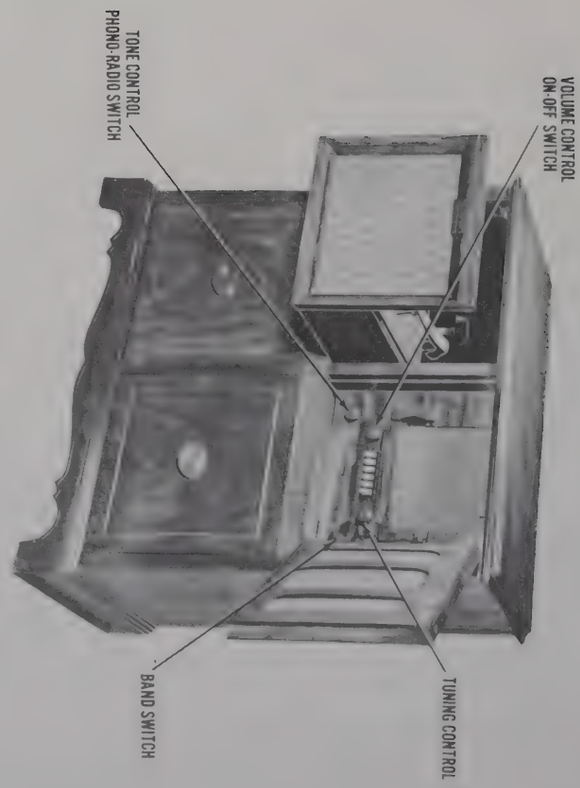
ITEM No.	REPLACEMENT DATA		REMARKS
	TRUETONE PART No.	ASTATIC PART No.	
82	A50812	L-70-A	L-70-Z original Part

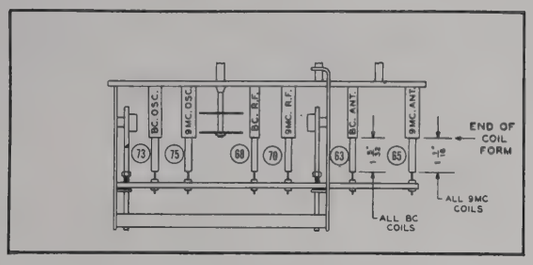
MISCELLANEOUS

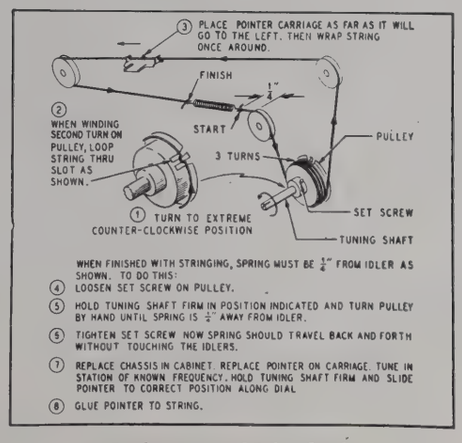
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
83A	Band Switch	B-20A-10964	Ant. Section
B	"	B-20A-10965	RF & Osc. Section
84	Switch	Part of 125180	Radio-Phono
A5	Trimmer	124144	BC Osc. Adj.
A6	"	A-8G-7205	BC RF Adj.
A7, A12	Dual Trimmer	124143	BC Ant. Adj. / 9MC Ant. Adj.
A10	Trimmer	124145	9MC Osc. Adj.
A11	"	A-8G-7206	9MC RF Adj.
	Dial Scale	B-6D-10949	
	Dial Pointer	B-2G-10588	

PUSHBUTTONS ADJUSTMENTS

1. Turn on receiver and allow it to warm up for about 15 minutes.
2. Pull out all buttons until they release with a snap.
3. Tune in desired stations with manual tuning control and hold the manual tuning control on station and push desired pushbutton in all the way.
4. To set up the remaining pushbuttons follow the same procedure as outlined above.






3 PLACE POINTER CARRIAGE AS FAR AS IT WILL GO TO THE LEFT. THEN WRAP STRING ONCE AROUND.
FINISH
1"
2 WHEN WINDING SECOND TURN ON PULLEY, LOOP STRING THRU SLOT AS SHOWN.
START
PULLEY
3 TURNS
1 TURN TO EXTREME COUNTER-CLOCKWISE POSITION
SET SCREW
TUNING SHAFT
WHEN FINISHED WITH STRINGING, SPRING MUST BE ¼" FROM IDLER AS SHOWN. TO DO THIS:
4 LOOSEN SET SCREW ON PULLEY.
5 HOLD TUNING SHAFT FIRM IN POSITION INDICATED AND TURN PULLEY BY HAND UNTIL SPRING IS ¼" AWAY FROM IDLER.
6 TIGHTEN SET SCREW NOW SPRING SHOULD TRAVEL BACK AND FORTH WITHOUT TOUCHING THE IDLERS.
7 REPLACE CHASSIS IN CABINET. REPLACE POINTER ON CARRIAGE. TUNE IN STATION OF KNOWN FREQUENCY. HOLD TUNING SHAFT FIRM AND SLIDE POINTER TO CORRECT POSITION ALONG DIAL
8 GLUE POINTER TO STRING.

Replacement of Drive Cord

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	0V.	2.1VDC	120VDC	6.3VAC	250VDC
2	6SA7	0V.	6.3VAC	265VDC	120VDC	-14.5VDC§	0V.	0V.	-.2VDC
3	6SK7GT	0V.	0V.	0V.	-.05VDC	5VDC	120VDC	6.3VAC	265VDC
4	6SQ7GT	0V.	0V.	0V.	-.05VDC	-.4VDC	155VDC	0V.	6.3VAC
5	6J5	0V.	6.3VAC	155VDC	280VDC	13VDC	90VDC	0V.	92VDC
6	6K6GT	0V.	0V.	260VDC	265VDC	0V.	0V.	6.3VAC	21.5VDC
7	6K6GT	0V.	6.3VAC	260VDC	265VDC	0V.	0V.	0V.	21.5VDC
8	5Y3GT	0V.	320VDC	40VAC	300VAC	40VAC	300VAC	37VAC	320VDC

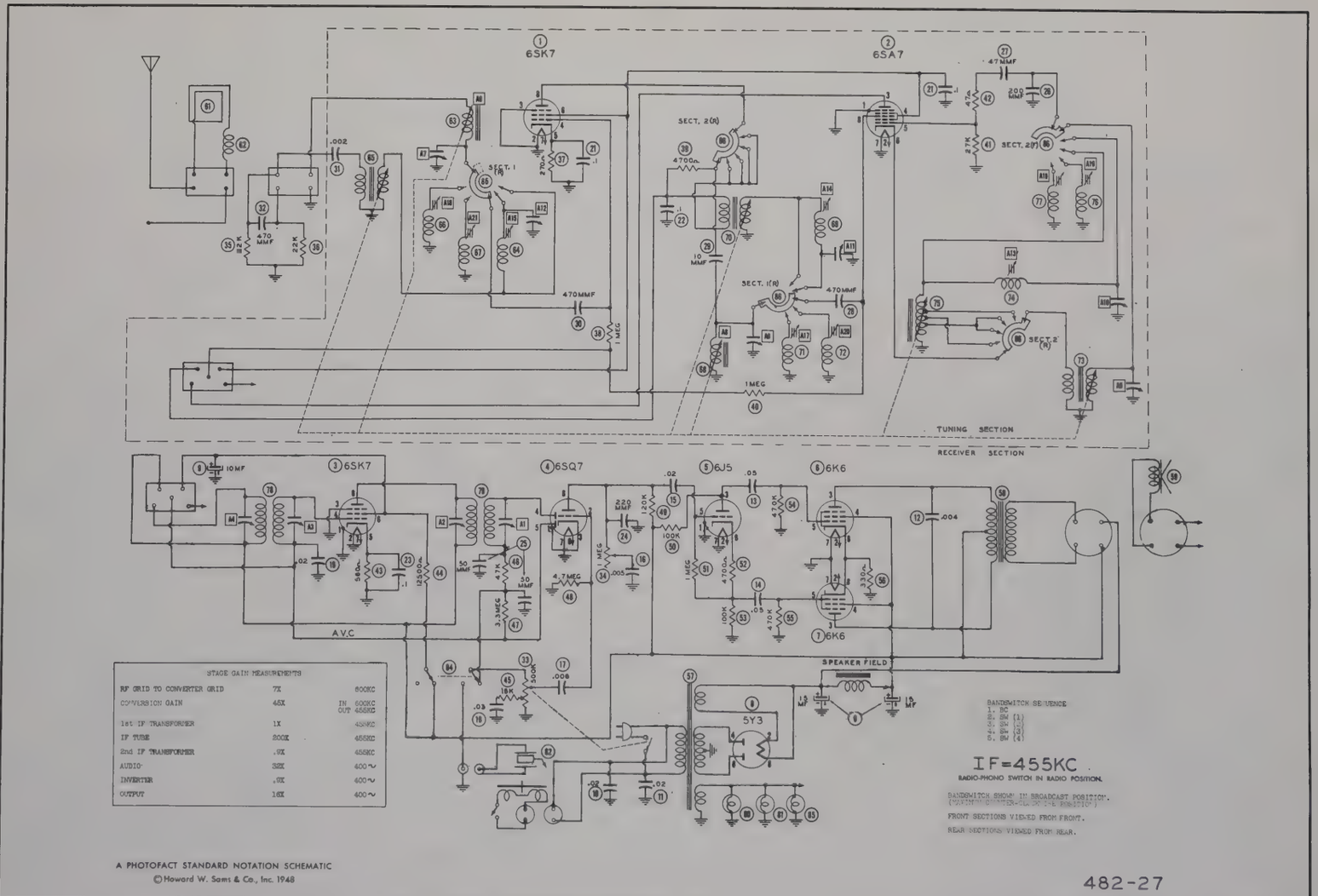
§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	5 Meg.	275Ω	162KΩ	.1Ω	150KΩ
2	6SA7	0Ω	.1Ω	150KΩ	162KΩ	26KΩ	.5Ω	0Ω	5 Meg.
3	6SK7GT	0Ω	0Ω	0Ω	4 Meg.	560Ω	162KΩ	.1Ω	150KΩ
4	6SQ7GT	0Ω	5 Meg.	0Ω	4 Meg.	600KΩ	280KΩ	0Ω	.1Ω
5	6J5	0Ω	.1Ω	250KΩ	150KΩ	1 Meg.	100KΩ	0Ω	110KΩ
6	6K6GT	0Ω	0Ω	150KΩ	150KΩ	500KΩ	INF.	.1Ω	340Ω
7	6K6GT	0Ω	.1Ω	150KΩ	150KΩ	500KΩ	INF.	0Ω	340Ω
8	5Y3GT	INF.	150KΩ	INF.	110Ω	INF.	120Ω	INF.	150KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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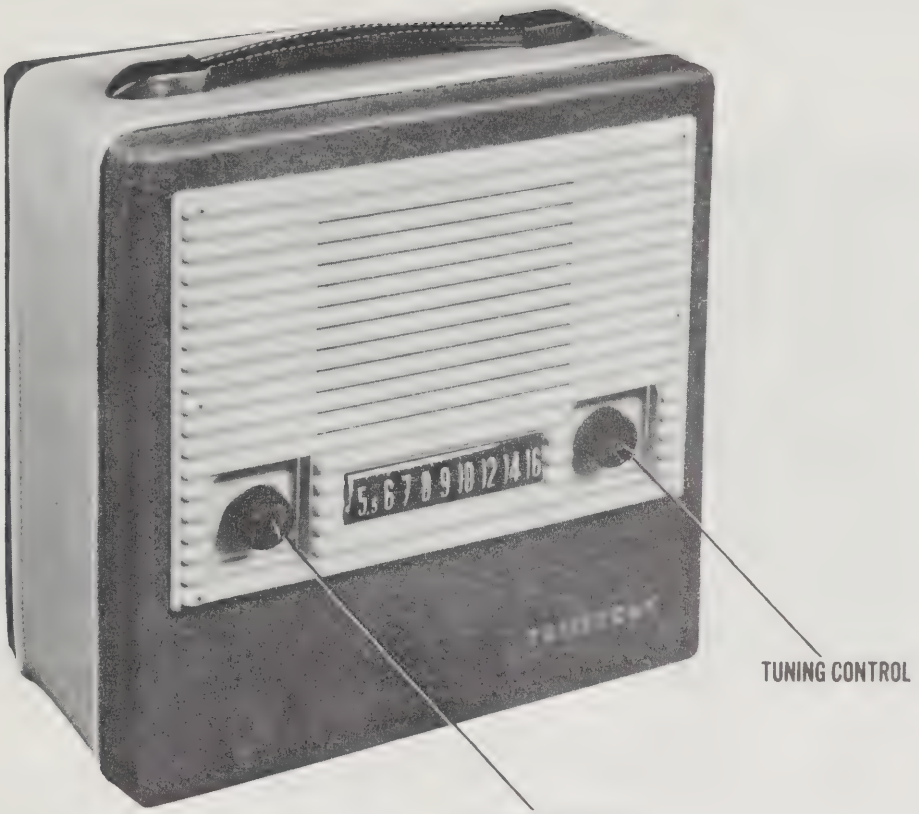
482-27

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

TRUETONE MODEL D-3721
BATTERY-LINE OPERATED



TRUETONE MODEL D-3721
BATTERY-LINE OPERATED

TRUETONE MODEL D-3721

TRADE NAME	Truetone, Model D-3721 (Factory #110BX)
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Three Power Operated Portable Superheterodyne with Loop Ant.
TUBES (FOUR)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output
POWER SUPPLY RATING	110-120 Volts AC-DC or 7.5 Volts "A" Supply and 90 Volts "B" Supply in Pack Form .17 Amp. @ 117 Volts AC or 53MA @ 7.5 Volts DC and 12MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation.
2	.1 MFD.	"	"	"	"	A3,A4	Adjust for maximum output.
3	250MMFD	High side to ext. ant. lead. Low side to ext. ground lead.	1600KC	"	"	A5	" " " "
4	250MMFD	"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output. Install receiver in cabinet. Tune in weak station near 600KC and adjust A7 for maximum volume.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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DATE 1/48 SET #32 FOLDER #482-28

PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D-3721
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3Q4	3Q4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	A15-281	DY-401	EL-224		UP42215	◆ Filter
B	20	150						■ "
C	20	150						▲ "
D	100	25		M-100-25	UHC-102		UP-100-25	Cathode Bypass
6	.05	400	A16-158	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
7	.005	150	A16-166	QA1M-2-.006	TC-25	484-005	DT4D5	Output Plate Bypass
8	.1	200	A16-157	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Power Supply
9	.005	150	A16-166	QA1M-2-.006	TC-25	484-005	DT4D5	Audio Coupling
10	.01	400	A16-165	S-4-01	TC-11	484-01	DT4S1	AF Screen Bypass
11	.002	600	A16-155	S-6-002	TC-22	684-002	DT6D2	IF Grid Filter
12	.01	400	A16-165	S-4-01	TC-11	484-01	DT4S1	Conv. Screen Decoup.
13	.1	400	A16-160	S-4-1	TC-1	484-.1	DT4P1	Filament Bypass
14	.1	400	A16-160	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
15	.002	600	A16-155	S-6-002	TC-22	684-002	DT6D2	AVC Filter
16	.005	150	A16-166	QA1M-2-.006	TC-25	484-005	DT4D5	Audio Coupling
17	50	50	A15-175	MO.5-45	1FM-45	1468-00005	5W5Q5	AF Plate Bypass
18	100	100	A15-188	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
19	100	100	A15-188	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
20	50	50	A15-175	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
21	100	100	A15-188	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling

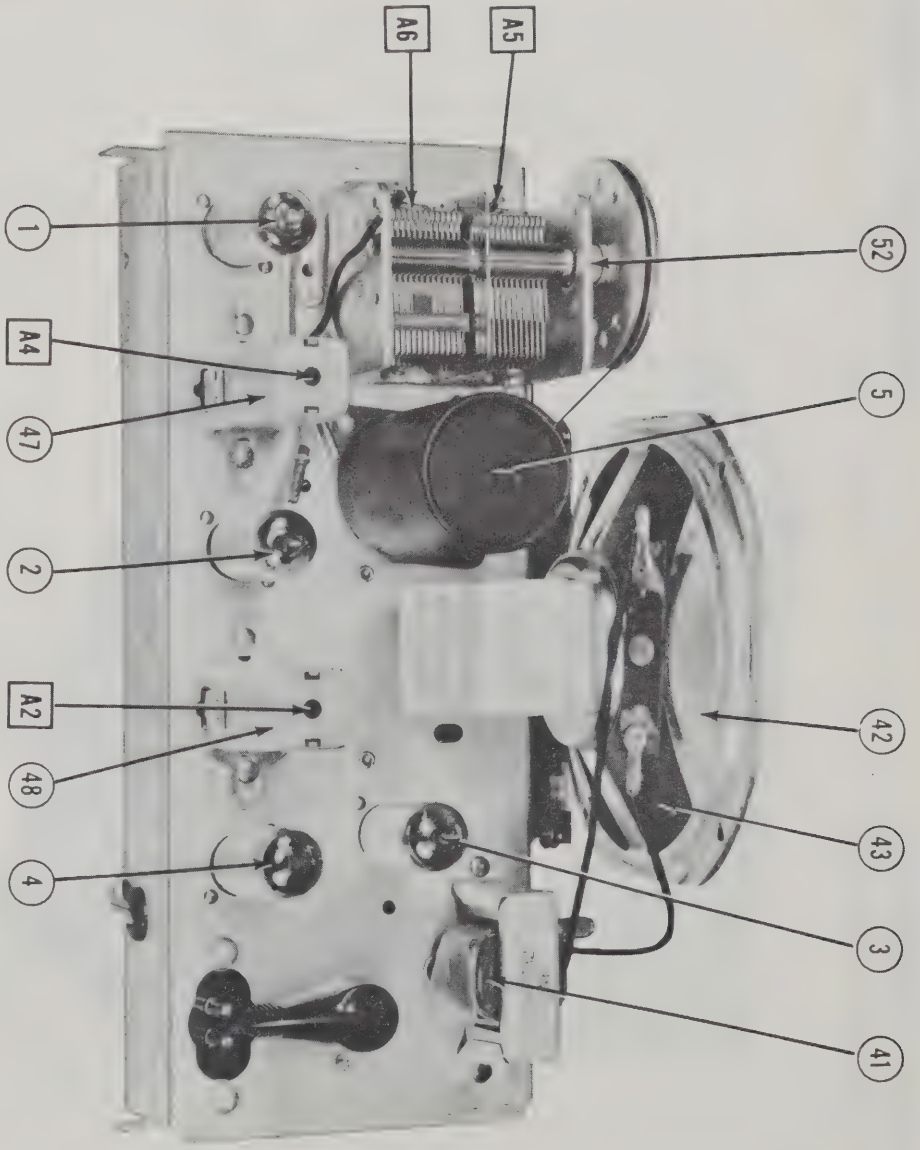
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	1 Meg.	½	A24-170	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 22A per instructions
C	Switch		" "	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
23	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. Converter Grid
24	820Ω	½	A60-709	BTS-820	Gray-Red-Br. Filament String
25	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. Line Isolation
26	100KΩ	½	A60-671	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
27	3900Ω	½	A60-710	BTS-3900	Or.-White-Red Converter Screen Decoupling
28	10 Meg.	½	A60-663	BTS-10 Meg.	Br.-Blk.-Blue IF Grid
29	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
30	50KΩ	½	A60-685	BTS-47K	Grn.-Blk.-Or. Diode RF Filter
31	1000Ω	½	A60-675	BTS-1000	Br.-Blk.-Red Filament String
32	10 Meg.	½	A60-663	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
33	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. AF Screen Dropping
34	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
35	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
36	470Ω	½	A60-707	BTS-470	Yl.-Vi.-Br. Filament String
37	680Ω	½	A60-708	BTS-680	Blue-Gray-Br. " "
38A	1000Ω	10	A60-713	AB-1000	Filament Dropping
B	1000Ω			AB-1000	" "
39	2200Ω	½	A60-714	BTS-2200	Red-Red-Red Filter
40	75Ω	3	A60-712	AB-75	Vi.-Grn.-Blk. Surge Limiter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
41A	7400Ω	3.0Ω	580Ω	.7Ω	B80-232	A-3822	T22S47	A-2932	
B					B80-228				Alternate Transformer

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-1071†		†Drill and tap magnet frame and trim flange.
42A	PM	3.0Ω	B79-352	Mod. P5-V		
B			B79-350			Alternate Speaker
	CONE DIA.	VC DIA.				
43	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

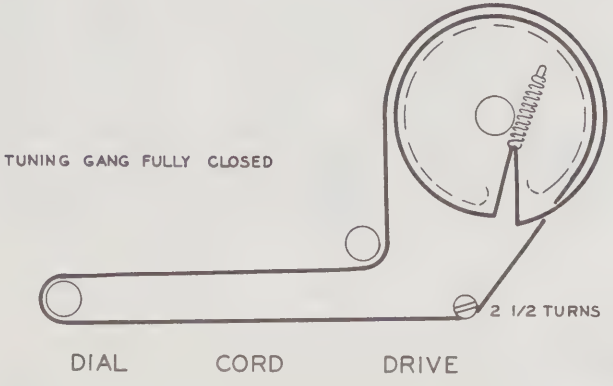
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
44	Loop Ant.	0Ω	.5Ω			
45	Loop Load. Coil		.3Ω	A10-470		
46	Osc. Coil	2Ω	7Ω	B10-460		
47	Input IF	22Ω	22Ω	C10-475	16-6658	
48	Output IF	22Ω	22Ω	C10-475	16-6659	

BATTERIES

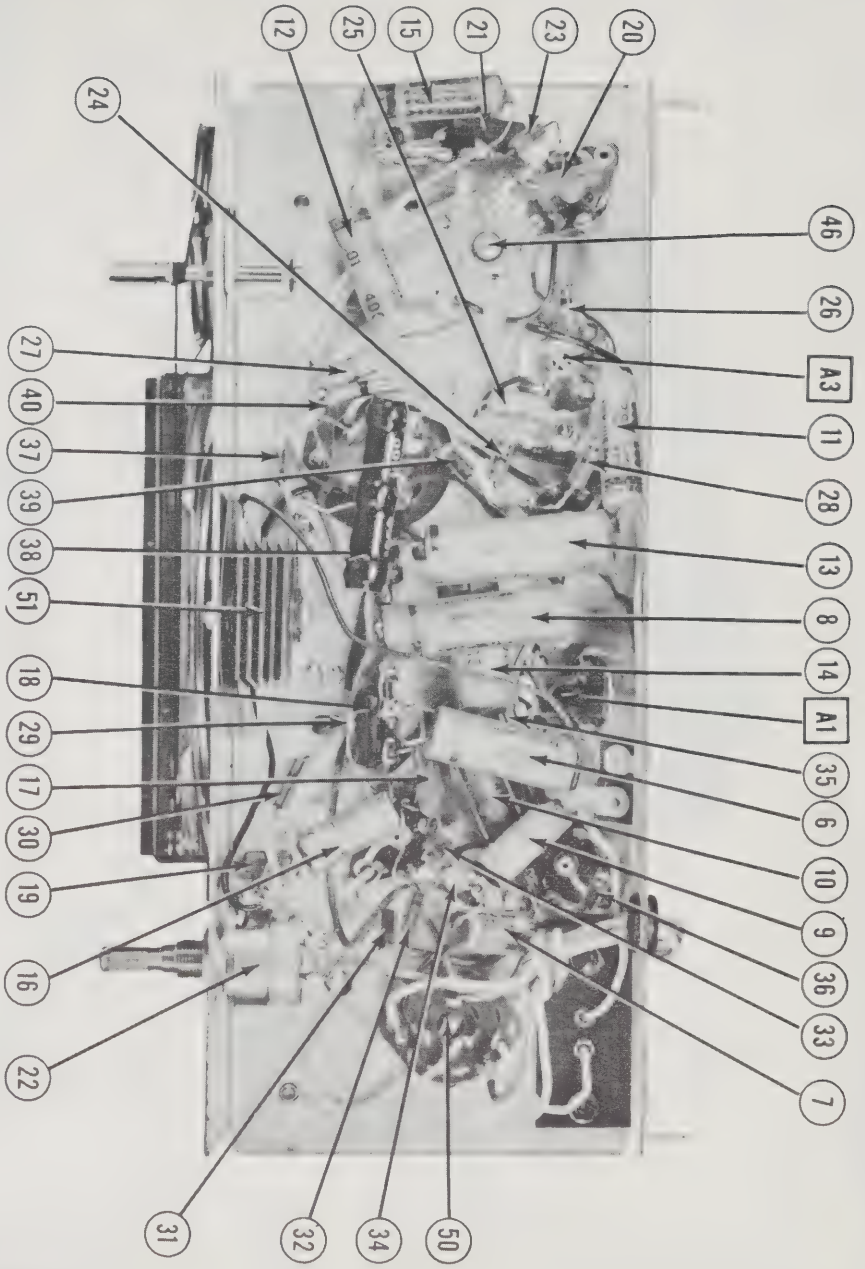
ITEM No.	VOLTAGE	TRUETONE PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
49	7.5V "A" 90V "B"				#753	

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
50	Switch	B69-173	AC-DC-Batt.
51	Rectifier	A83-391	Selenium
52	2 Gang Var. Cap.	B-19-188	(16-476 MMF, 42-224MMF)
	Dial Scale	B67-496	
	Dial Pointer	A58-63	

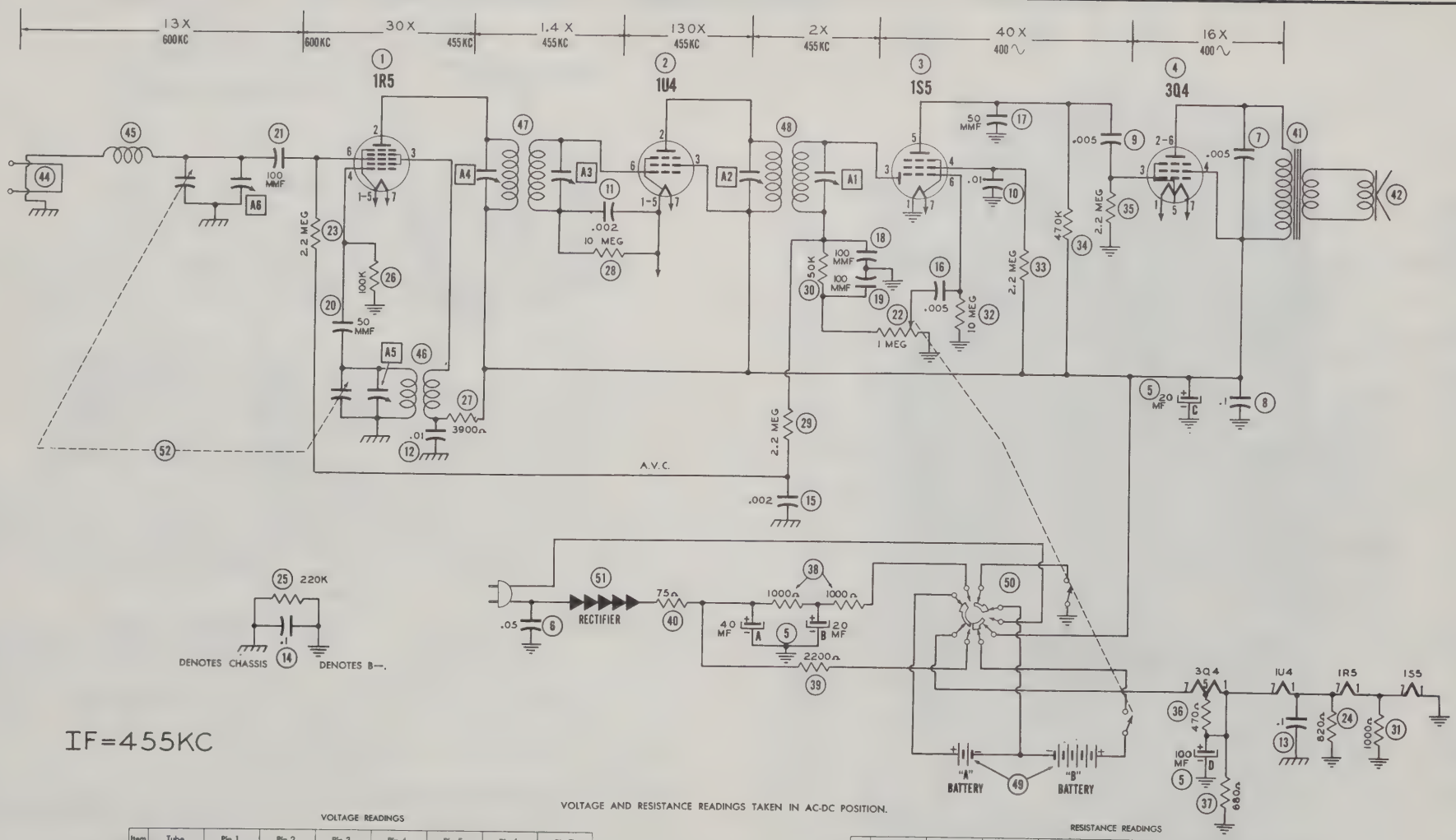


CHASSIS—BOTTOM VIEW



TRUETONE MODEL D-3721
BATTERY-LINE OPERATED

TRUETONE MODEL D-3721
BATTERY-LINE OPERATED



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	1.8VDC	90VDC	75VDC	-16VDC§	1.8VDC	0V.	3.25VDC
2	1U4	3.25VDC	90VDC	90VDC	90VDC	3.25VDC	0V.	4.8VDC
3	1S5	0V.	-.15VDC	-.15VDC	18VDC	18VDC	0V.	1.8VDC
4	3Q4	4.8VDC	85VDC	0V.	90VDC	6.25VDC	85VDC	8VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	4KΩ	8KΩ	100KΩ	*	5 Meg.	*
2	1U4	*	4KΩ	4KΩ	4KΩ	*	10 Meg.	*
3	1S5	*	1 Meg.	1 Meg.	2.2 Meg.	470KΩ	10 Meg.	*
4	3Q4	*	4KΩ	2.5 Meg.	4KΩ	*	4KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

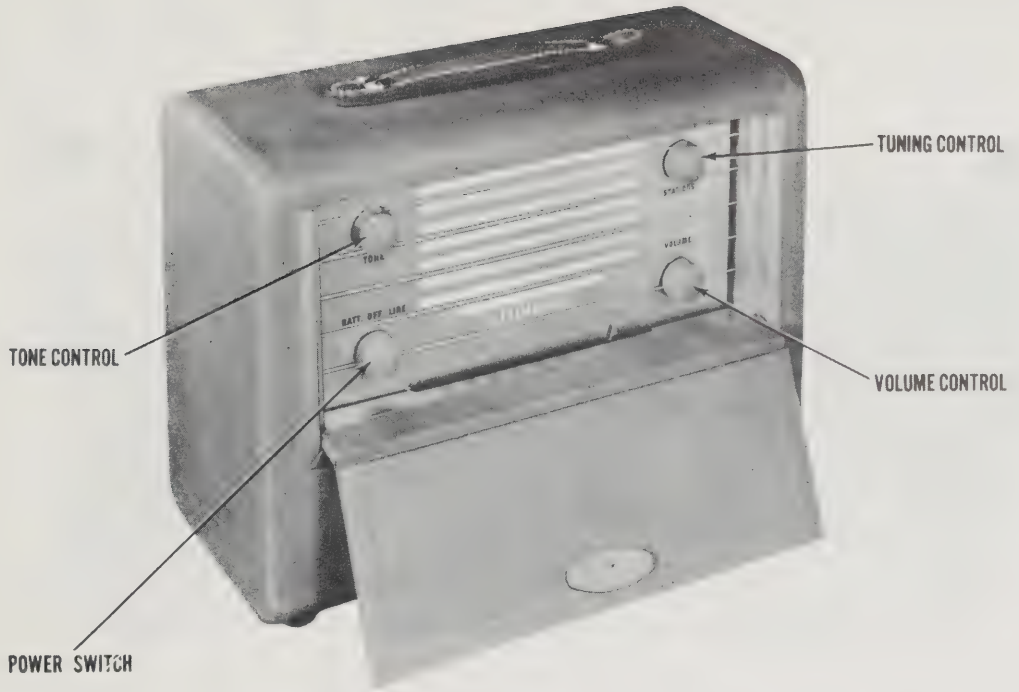
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

482-28

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to common negative.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

WESTINGHOUSE MODEL H-165
BATTERY-LINE OPERATED



WESTINGHOUSE MODEL H-165
BATTERY-LINE OPERATED

WESTINGHOUSE MODEL H-165

TRADE NAME	Westinghouse, Model H-165 (Ch. V-2120)
MANUFACTURER	Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.
TYPE SET	Three Power Operated Portable Superheterodyne with Loop Ant.
TUBES (FIVE)	Types, 1U4 RF Amp., 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3V4 Power Output
POWER SUPPLY RATING	105-120 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form .15 Amp. @ 117 Volts AC or 50MA @ 9 Volts DC and 12MA @ 90 Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

After receiver has been removed from cabinet turn tuning cap. fully closed and mark position of pointer on pointer saddle guide. Use this mark as index mark referred to in Steps 4 & 5 below.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) 1U4 IF Tube (3). Low side to B-.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2	.1 MFD.	High side to Pin 6 (grid) 1R5. Low side to B-.	"	"	"	A3,A4	Adjust for maximum output.
3	.1 MFD.	High side to center stator of tuning cap. Low side to B-.	"	"	"	A1,A2, A3,A4.	" " " "
4	.1 MFD.	"	600KC	1-3/32" from index mark at left end of dial pointer guide.	"	A5	" " " "
5	.1 MFD.	"	1600KC	5-11/32" from index mark at left end of dial pointer guide.	"	A6	Adjust for maximum output. Repeat Steps 4 & 5 until no further improvement can be made.
6	.1 MFD.	Loop	1400KC	Tune for maximum output.	"	A7,A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE MODEL H-165 (Ch. V-2120)
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1U4	1U4	6AR	
2	Converter	1R5	1R5	7AT	
3	IF Amp.	1U4	1U4	6AR	
4	Det.-AVC-AF	1S5	1S5	6AU	
5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTINGHOUSE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150	V-4791	DY-2x50-150	EL-25	AF1010D	UP5515	■ Filter
B	50	150						▲ "
7	100	25	V-3866	M-100-25	UHC-102	PRS25-100	BRH251	Filament Bypass
8	05	400	RCP10W4503A	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
9	05	400	RCP10W4503A	S-4-05	TC-15	484-05	DT4S5	Filament Bypass
10	.1	400	RCP10W4104A	S-4-1	TC-1	484-.1	DT4P1	" "
11	001	600	RCP10W6102A	S-6-001	TC-21	684-001	DT6D1	Output Plate Bypass
12	005	600	RCP10W6502A	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
13	05	400	RCP10W4503A	S-4-05	TC-15	484-05	DT4S5	AF Screen Bypass
14	.1	400	RCP10W4104A	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
15	005	600	RCP10W6502A	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
16	.1	400	RCP10W4104A	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supply
17	01	400	RCP10W4103A	S-4-01	TC-11	484-01	DT4P1	IF Grid Filter
18	05	400	RCP10W4503A	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Decoupling
19	05	400	RCP10W4503A	S-4-05	TC-15	484-05	DT4S5	AVC Filter
20	05	400	RCP10W4503A	S-4-05	TC-15	484-05	DT4S5	RF Grid Filter
21	300		RCM20A301M	MO.5-33	1FM-335	1468-0003	5W5T3	Tone Comp.
22	300		RCM20A301M	MO.5-33	1FM-335	1468-0003	5W5T3	AF Plate Bypass
23	100		RCM20A101K	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
24	100		RCM20A101K	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
25	100		RCM20A101K	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Cap.
26	240		RCM20A241K	MO.5-325	1FM-325	1468-00025	5W5T25	RF Coupling

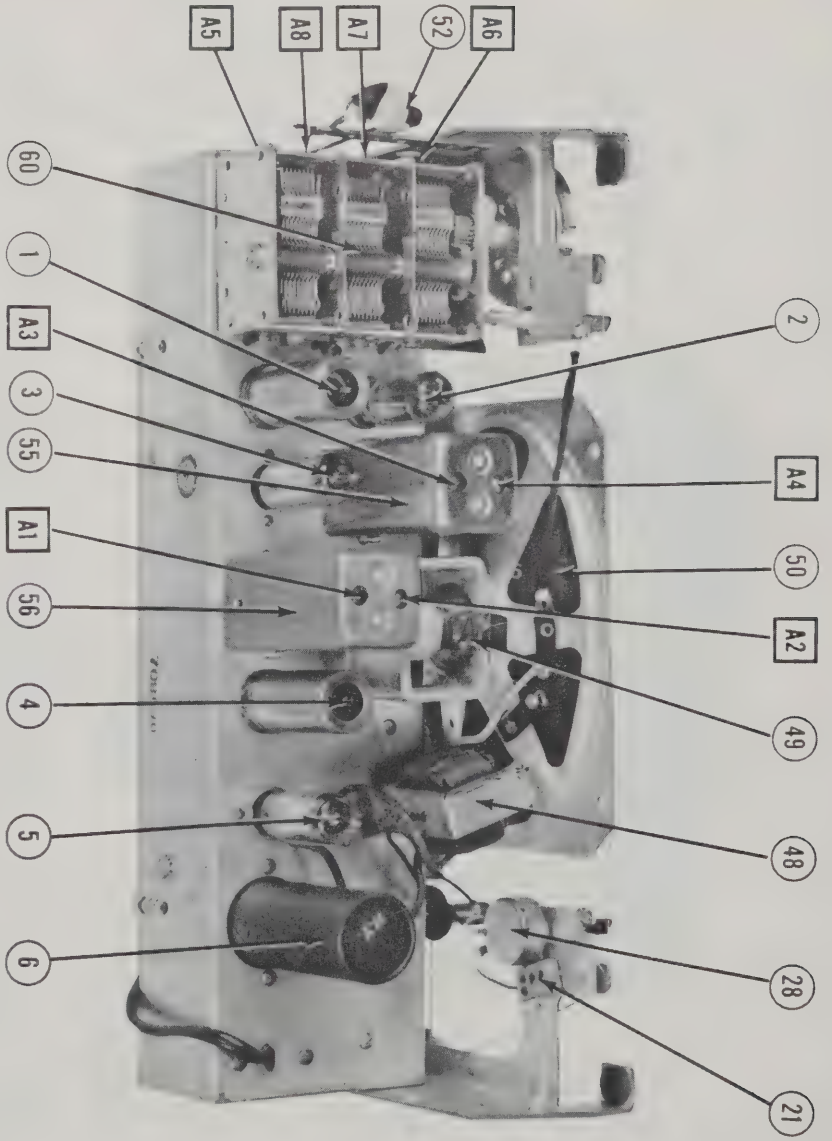
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTING. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
27A	1 Meg.	½	V-4797	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 27A per instructions
28A	1 Meg.	½	V-4796	D11-137	M-61-S	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 28A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	IRC PART No.	IDENTIFICATION CODES
29	2.2 Meg.	½	RC10AE225M	BTS-2.2 Meg	Red-Red-Grn. RF Grid
30	470KΩ	½	RC10AE474M	BTS-470K	Yl.-Vi.-Yl. RF Grid
31	100KΩ	½	RC10AE104K	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
32	6800Ω	½	RC20AE682K	BTS-6800	Blue-Gray-Red Converter Screen Decoupling
33	3.3 Meg.	½	RC10AE335M	BTS-3.3 Meg	Or.-Or.-Grn. AVC Network
34	4.7 Meg.	½	RC20AE475M	BTS-4.7 Meg	Yl.-Vi.-Grn. IF Grid
35	470Ω	½	RC20AE471M	BTS-470	Yl.-Vi.-Br. Decoupling
36	47KΩ	½	RC10AE473M	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
37	4.7 Meg.	½	RC20AE475M	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
38	3.3 Meg.	½	RC10AE335M	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
39	470KΩ	½	RC10AE474M	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
40	1 Meg.	½	RC20AE105K	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
41	220KΩ	½	RC10AE224M	BTS-220K	Red-Red-Yl. Line Isolation
42	68Ω		V-4807		Blue-Gray-Blk. Surge Limiter
43	2200Ω		V-4872	AB-2250	Filament Dropping
44	390Ω	½	RC10AE391K	BW-½-390	Or.-White-Br. Filament String
45	820Ω	½	RC20AE821K	BTS-820	Gray-Red-Br. Filament String
46	390Ω	½	RC10AE391K	BW-½-390	Or.-White-Br. Filament String
47	1000Ω	1	RC30AE102M	BTA-1000	Br.-Blk.-Red Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WESTINGHOUSE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
48	8500Ω	3.6Ω	430Ω	.4Ω		A-3856	T22S45	A-2900	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WESTINGHOUSE PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
49	PM	3.6Ω	V-4809			
	CONE DIA.	VC DIA.				
50	4"x6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

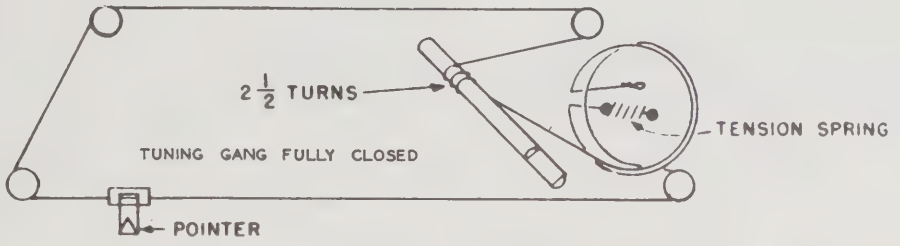
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	WESTINGHOUSE PART No.	MEISSNER PART No.	
51	Loop Ant.		.5Ω	V-4831		
52	Ant. Load. Coil		1Ω	V-4794		
53	RF Coil	115Ω	6Ω	V-4813	14-1027	
54	Osc. Coil	3.8Ω	8.3Ω	V-4795	14-1040	
55	Input IF	20Ω	1Ω	V-4811	16-6658	
56	Output IF	19Ω	18.2Ω	V-4812		

BATTERIES

ITEM No.	VOLTAGE	WESTINGHOUSE PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
57	9V "A" 90V "B"	V-3920			#754	

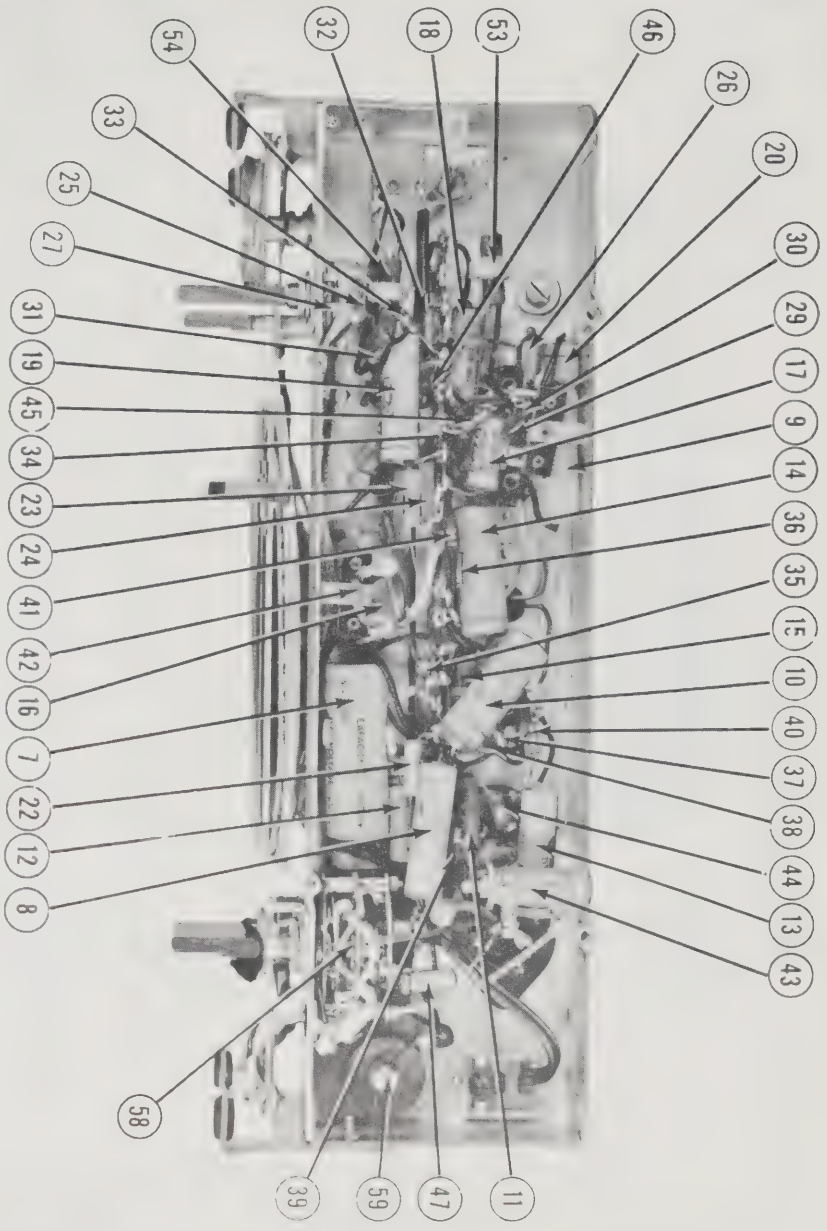
MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
58	Switch	V-4803	AC-DC-Batt.-Off
59	Rectifier	V-4115	Selenium
60	3 Gang Var. Cap.	V-4793	(30-387MMF) Each section
A5	Padder	V-4792	Osc. Adj.
	Dial Pointer	V-4801	



DIAL DRIVE

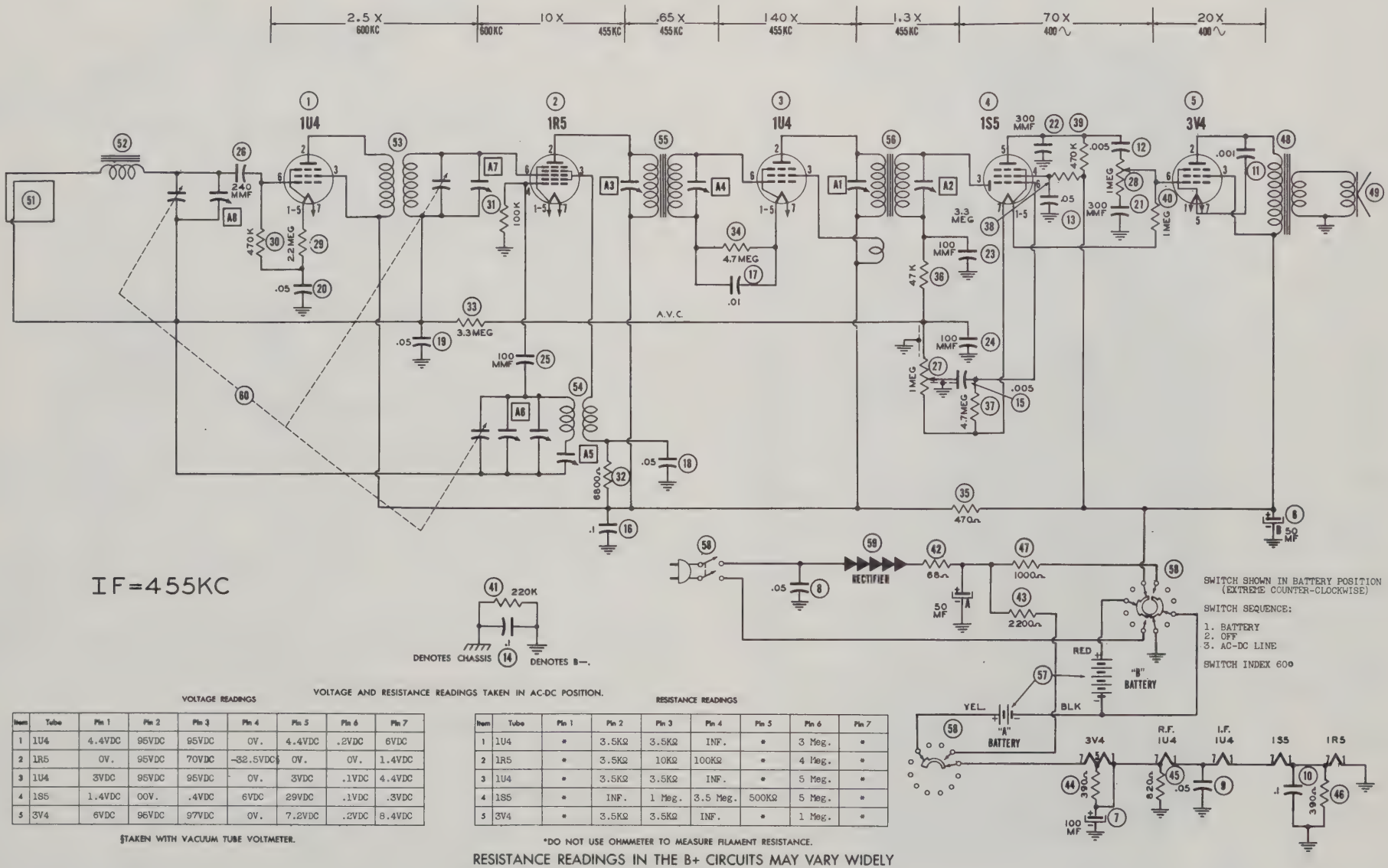
CHASSIS—BOTTOM VIEW



WESTINGHOUSE MODEL H-165 (Ch. V-2120)
BATTERY-LINE OPERATED

WESTINGHOUSE MODEL H-165 (Ch. V-2120)
BATTERY-LINE OPERATED

DATE 1/48 SET #32 FOLDER #482-29



VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1U4	4.4VDC	95VDC	95VDC	0V.	4.4VDC	.2VDC	6VDC
2	1R5	0V.	95VDC	70VDC	-32.5VDC§	0V.	0V.	1.4VDC
3	1U4	3VDC	95VDC	95VDC	0V.	3VDC	.1VDC	4.4VDC
4	1S5	1.4VDC	00V.	.4VDC	6VDC	29VDC	.1VDC	.3VDC
5	3V4	6VDC	95VDC	97VDC	0V.	7.2VDC	.2VDC	8.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1U4	*	3.5KΩ	3.5KΩ	INF.	*	3 Meg.	*
2	1R5	*	3.5KΩ	10KΩ	100KΩ	*	4 Meg.	*
3	1U4	*	3.5KΩ	3.5KΩ	INF.	*	5 Meg.	*
4	1S5	*	INF.	1 Meg.	3.5 Meg.	500KΩ	5 Meg.	*
5	3V4	*	3.5KΩ	3.5KΩ	INF.	*	1 Meg.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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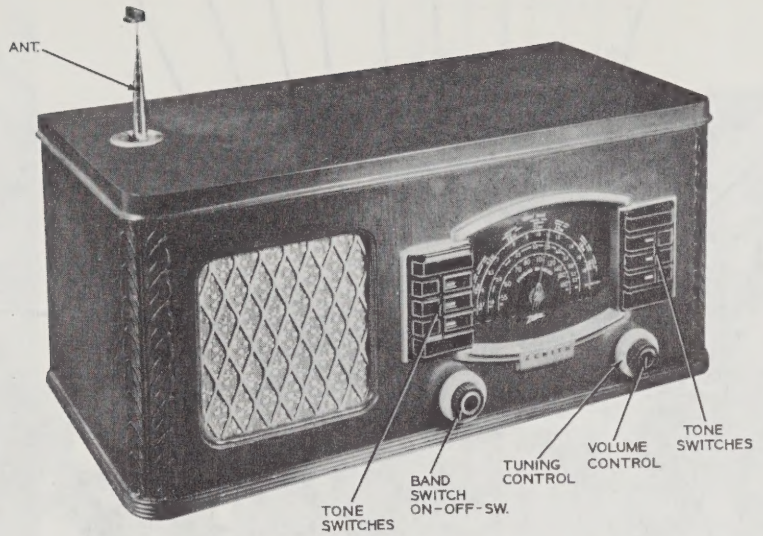
482-29

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurment operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to low end of volume control.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

ZENITH MODEL 6G038 (Ch. 6C50)
BATTERY-LINE OPERATED



ZENITH MODEL 6G038 (Ch. 6C50)

TRADE NAME	Zenith, Model 6G038 (Ch. 6C50)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	Three Power Operated Portable Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 1N5GT RF Amp., 1A7GT Converter, 1N5GT IF Amp., 1LD5 Det.-AVC-AF, 3Q5GT Power Output, 117Z6GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	.17 Amp. @ 117 Volts AC or 55MA @ 9 Volts DC, 12MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1820KC **SHORT WAVE** 1.78-5.75MC. 5.65-18.4MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Set antenna switch to inside antenna position.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.5 MFD.	High side to grid cap. 1A7. Low side to B-.	455KC	BC (2 positions counter-clockwise)	600KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation.
2		Loop	18MC	SW 2 (fully clockwise)	18MC	"	A5	Fashion loop of several turns of wire and radiate signal into pole ant. (extended full length). Adjust for maximum output.
3		"	16MC	"	Tune for maximum output.	"	A6	Rock tuning cap. and adjust for maximum output.
4		"	5MC	SW 1 (1 position counter-clockwise)	5MC	"	A7	Adjust for maximum output
5		"	"	"	Tune for maximum output.	"	A8	" " " "
6		"	1800KC	BC	1800KC	"	A9	" " " "
7		"	1700KC	"	Tune for maximum output.	"	A10, A11	" " " "
8		"	600KC	"	"	"	A12	Rock tuning cap. and adjust for maximum output. Repeat Steps 6, 7 & 8 until no further improvement can be made. If receiver is to be operated from an external antenna adjust A13 for maximum volume on a weak station near 1400KC with ext. antenna connected and antenna switch in external antenna position.

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DATE 1/48 SET #32 FOLDER #482-30

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1N5GT	1N5GT	5Y	
2	Converter	1A7GT	1A7GT	7Z	
3	IF Amp.	1N5GT	1N5GT	5Y	
4	Det.-AVC-AF	1LD5	1LD5	6AX	
5	Power Output	3Q5GT	3Q5GT	7AP	
6	Rectifier	117Z6GT	117Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	150	22-1047	DY-402010-150	EL-313	AF844D	UP43215	■ Filter
B	20	150						▲ "
C	10	150						"
8A	40	150	22-1234	DY-40-150	EL-14	AF44D40A*	UP5015	■ "
B	200	10		M-250-12	UHC-212		BRH1225	▲ Filament Bypass
9	.05	200	22-1017	MPH-6-05	TC-15	484-05	DT4S5	Line Filter
10	.004	600	22-448	S-6-004	TC-24	684-004	DT6D4	Output Plate Bypass
11	.01	600	22-196	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
12	.05	200	22-829	S-4-05	TC-15	484-05	DT4S5	Audio Decoupling
13	.1	200	22-827	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
14	.001	600	22-492	S-6-001	TC-21	684-001	DT6D1	Tone Comp.
15	.005	600	22-229	S-6-005	TC-25	684-005	DT6D5	" "
16	.002	600	22-887	S-6-002	TC-22	684-002	DT6D2	" "
17	.004	600	22-448	S-6-004	TC-24	684-004	DT6D4	" "
18	.002	600	22-887	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
19	.003	400	22-326	S-6-003	TC-23	484-003	DT6D3	AF Screen Bypass
20	.02	600	22-830	S-6-02	TC-12	684-02	DT6S2	Audio Coupling
21	.05	200	22-829	S-4-05	TC-15	484-05	DT4S5	Filament Bypass
22	.05	200	22-829	S-4-05	TC-15	484-05	DT4S5	RF Bypass Power Supply
23	.05	200	22-829	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
24	.05	200	22-829	S-4-05	TC-15	484-05	DT4S5	AVC Filter
25	.05	200	22-829	S-4-05	TC-15	484-05	DT4S5	" "
26	.02	200	22-327	S-4-02	TC-12	484-02	DT4S2	Filament Bypass
27	.01	400	22-1183	S-4-01	TC-11	484-01	DT4S1	Ant. Isolation
28	100	500	22-162	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
29	350	600	22-954	MO.5-34	1FM-335	1468-00035	5W5T4	Tone Comp.
30	150	600	22-470	MO.5-315	1FM-315	1468-00015	5W5T15	" "
31	150	600	22-470	MO.5-315	1FM-315	1468-00015	5W5T15	" "
32	2000	600	22-358	MW.5-22	1FM-22	1478-002	1W5D2	Feedback
33	5	500	22-303	MO.5-55	MS-55	1468-00005	5W5V5	RF Coupling
34	50	500	22-289	MO.5-45	1FM-45	1468-00005	5W5Q5	Fixed Trimmer

*Parallel sections to obtain desired capacity.

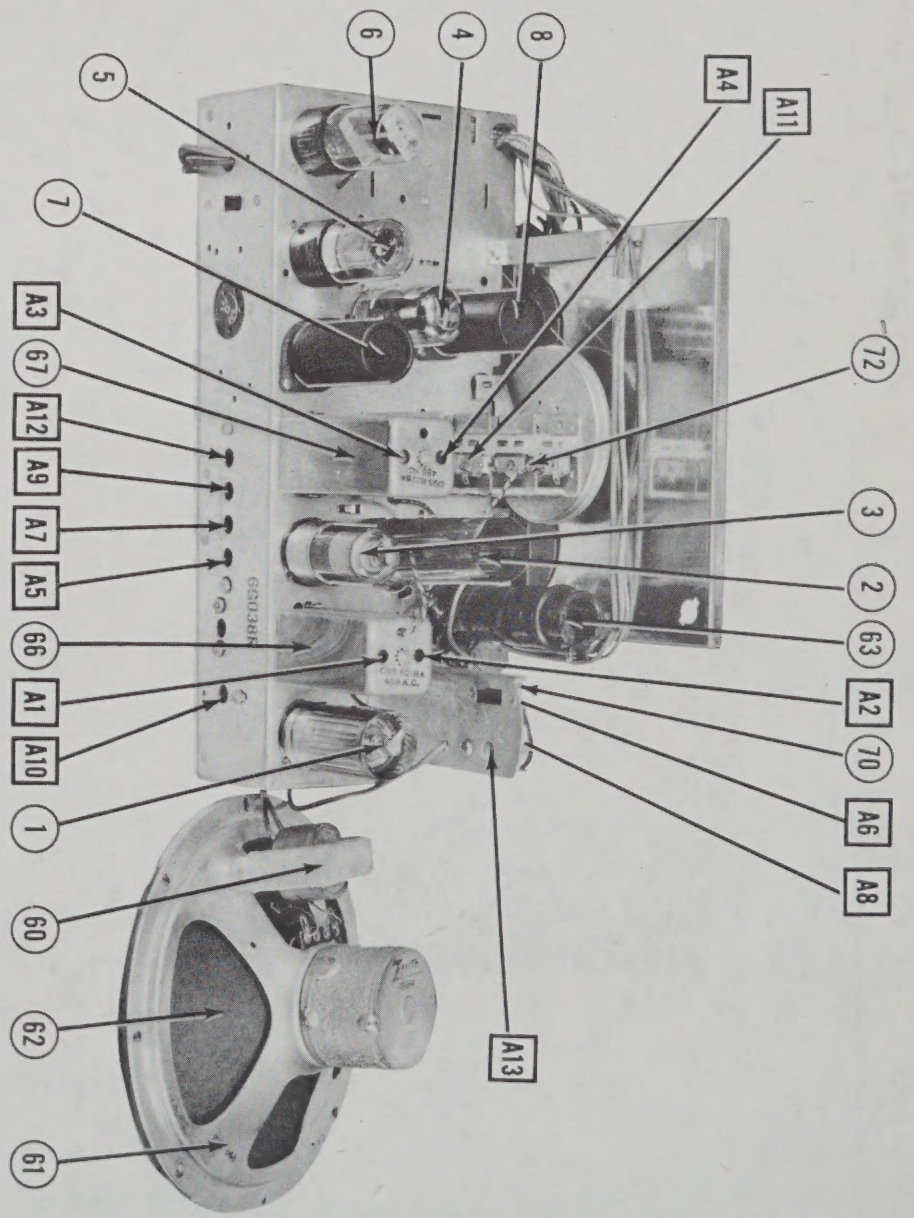
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
35A	2.5 Meg.	½	63-1244EX	D13-139XX		Volume Control tapped @ 500KΩ & 1 Meg.
B	Shaft		Not Req.	J		Attach to 35A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
36	4.7 Meg.	¼	63-602	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
37	4.7 Meg.	¼	63-602	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
38	2.2 Meg.	¼	63-600	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
39	10KΩ	¼	63-589	BTS-10K	Br.-Blk.-Or. RF Coil Primary Shunt
40	100Ω	½	63-577	BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
41	22KΩ	¼	63-591	BTS-22K	Red-Red-Or. Converter Screen Dropping
42	3300Ω	¼	63-635	BTS-3300	Or.-Or.-Red Decoupling

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
43	8200Ω	±	63-640	BTS-8200	Gray-Red-Red Oscillator Anode Dropping
44	470KΩ	±	63-597	BTS-470K	Yl.-Vi.-Yl. 2nd IF Transformer Shunt-See Note
45	1 Meg.	±	63-271	BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
46	10 Meg.	±	63-604	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
47	15 Meg.	±	63-976	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
48	4.7 Meg.	±	63-602	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
49	1 Meg.	±	63-271	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
50	2.2 Meg.	±	63-600	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
51	330Ω	±	63-580	BW-±-330	Or.-Or.-Br. Filament String
52	870Ω	1	63-1097		Gray-Vi.-Br. " "
53	470KΩ	±	63-597	BTS-470K	Yl.-Vi.-Yl. AF Decoupling
54	1000Ω	±	63-605	BTS-1000	Br.-Blk.-Red Filter
55	68KΩ	±	63-594	BTS-68K	Blue-Gray-Or. Tone Compensation
56	47KΩ	±	63-593	BTS-47K	Yl.-Vi.-Or. Tone Compensation
57	140Ω	2.5	63-1366		Surge Limiter
58A	950Ω		63-1259		Filament Dropping
B	950Ω		"		"
59	180KΩ	±	63-654	BTS-180K	Br.-Gray-Yl. Oscillator Grid

Note-Not used in all models.

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
60	9000Ω	3.4Ω	530Ω	.3Ω	206-454	A-3849	T22S87	A-2901	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-117		
61	PM	3.4Ω	49-464	Mod. P8-T		
	CONE DIA.	VC DIA.				
62	7"	3/4"	208-464			

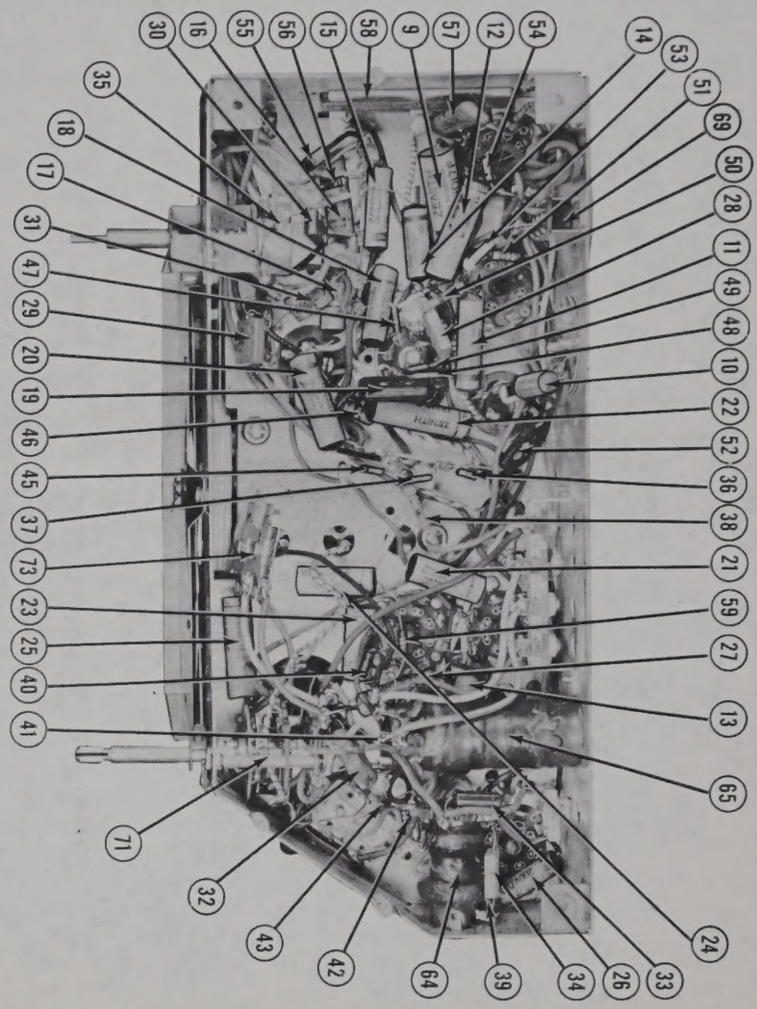
R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA MEISSNER PART No.
63A	BC Ant. Coil	23Ω	3.5Ω	S11815	
B	SW 1 " "	1Ω	.5Ω		
C	SW 2 " "		.3Ω		
64	RF Coil	58Ω	2.5Ω	S9690	
65A	BC Osc. Coil	2.2Ω	.9Ω	S9689	
B	SW 1 " "		.5Ω		
C	SW 2 " "		.1Ω		
66	Input IF	20Ω	20Ω	95-821	16-5712
67	Output IF	20Ω	20Ω	95-822	16-5714

BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
68	9V "A" 90V "B"	Z-884				

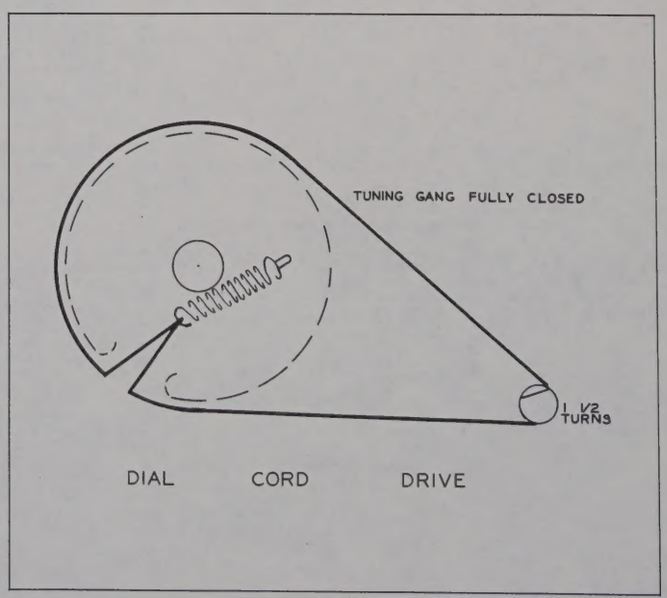
CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
69	Switch	85-171	AC-DC-Batt.
70	"	85-303	Ant. Selector
71	"	85-366	Band-On-Off
72	3 Gang Var. Cap.	22-1217	(14-468MMF, 15-562MMF, 15-562MMF)
73	Padder Cap.	22-930	Dual Unit Padder
A5	Trimmer Strip	22-1144	SW #2 Osc. Adj.
A7			SW #1 " "
A9			BC Osc. Adj.
A12			BC Osc. Padder
A6	Trimmer Strip	22-1230	SW #1 Ant. Adj.
A8			SW #2 " "
A10	Trimmer	22-1421	BC RF Adj.
A13	"	22-1421	Ext. Ant. Adj.
	Dial Pointer	59-121	
	Dial Escutcheon	192-69	Glass
	Antenna	8-11251	Telescopic Antenna Assembly



DATE 1/48 SET #32 FOLDER #482-30

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1N5	0V.	5.8VDC	100VDC	90VDC	0V.	0V.	4.5VDC	0V.	0V.
2	1A7	0V.	4.5VDC	100VDC	60VDC	-1.7VDC§	75V.	3.2VDC	3.2VDC	0V.
3	1N5	0V.	1.5VDC	100VDC	100VDC	0V.	0V.	0V.	0V.	0V.
4	1LD5	3.2VDC	20VDC	15VDC	.1VDC	65V.	0V.	0V.	1.5VDC	-
5	3Q5	0V.	8.2VDC	95VDC	100VDC	0V.	0V.	5.8VDC	7VDC	-
6	117Z6	0V.	0V.	117VAC	117VDC	117VAC	0V.	117VAC	117VDC	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

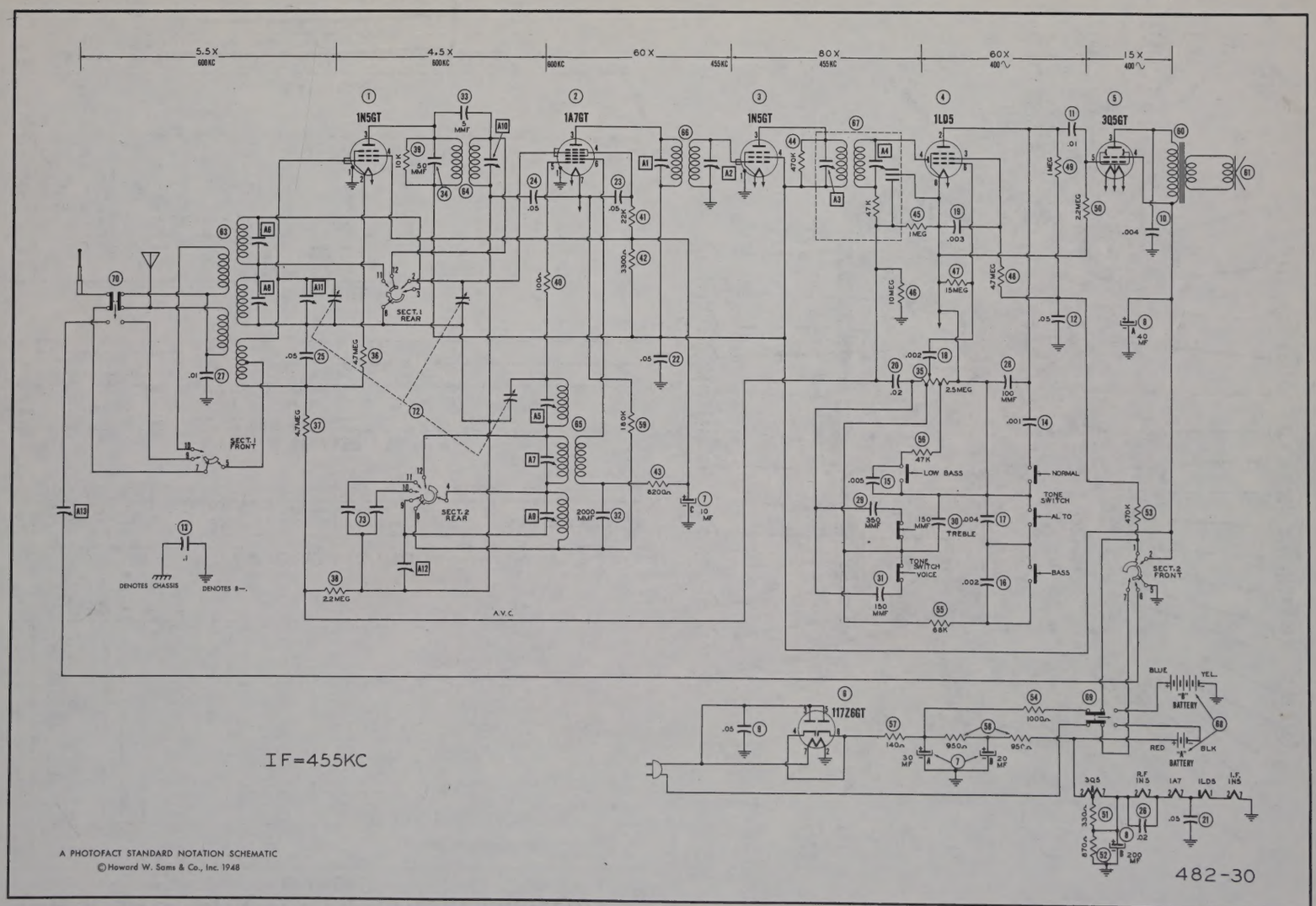
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1N5	0Ω	*	2.6KΩ	6KΩ	INF.	INF.	*	INF.	3 Meg.
2	1A7	0Ω	*	2.6KΩ	28KΩ	160KΩ	11KΩ	*	*	3 Meg.
3	1N5	0Ω	*	2.6KΩ	2.6KΩ	INF.	INF.	0Ω	0Ω	20Ω
4	1LD5	*	1.5 Meg.	5 Meg.	900KΩ	470KΩ	15 Meg.	INF.	*	-
5	3Q5	INF.	*	3KΩ	2.6KΩ	2.5 Meg.	INF.	*	*	-
6	117Z6	INF.	0Ω	220Ω	2KΩ	225Ω	INF.	200Ω	2KΩ	-

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.



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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting across diode load, Item #45.